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CONTENTS.

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

PRESIDENTIAL ADDRESS

(Abridged) on Psychological Medicine: Its Position in Medical and Allied Services. Delivered before the Medico-Psychological Association by C. HUBERT BOND, C.B.E., D.Sc., M.D., F.R.C.P., Commissioner of the Board of Control and Emeritus Lecturer in Psychiatry at Middlesex Hospital Medical School..... 319

ORIGINAL ARTICLES.

Further Experiments on the Preservation of Lemon Juice and Prevention of Scurvy. By Sir PERCY W. BASSETT-SMITH, K.C.B., C.M.G., F.R.C.P., F.R.C.S., Surgeon-Rear-Admiral, R.N. —(*Illustrated*)..... 321

Scurvy: A System of Prevention for a Polar Expedition, based on Present-day Knowledge. By A. H. MACKLIN, M.D., and L. D. A. HUSSEY, B.Sc., A.K.C., F.R.Anthrop. Soc., Members of the Shackleton-Rowett Expedition 322

Anæsthesia with Nitrous Oxide and Oxygen under Pressure. By H. H. DALE, M.D., F.R.S., and LEONARD HILL, M.B., F.R.S. (From National Institute for Medical Research, Hampstead)... 326

Nausea and Vomiting in Pregnancy. By VICTOR JOHN HARDING, D.Sc., Professor of Pathological Chemistry, University of Toronto, Canada..... 327

The Problem of the Head Louse. By G. A. AUDEN, M.D., F.R.C.P., D.P.H..... 370

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A Case of Abscess of the Breast occurring in a Typhoid Carrier. By S. C. DYKE, M.B., D.P.H., Pathologist to the Clinical Units, St. Thomas's Hospital..... 331

Schistosoma Mansoni in South Africa. By F. G. CAWSTON, M.D., First Streatfeild Research Scholar..... 332

A Case of Human Anthrax in Buganda Kingdom. By W. L. PEACOCK, M.B., B.Ch., District Medical Officer, Uganda; and H. LYNDHURST DUKE, O.B.E., M.D., Bacteriologist, Uganda District..... 332

MEDICAL SOCIETIES.

Society of Medical Officers of Health: Naval, Military, and Air Force Hygiene Group: Coöperation between the Civil and Military Sanitary Authorities during a Great National Emergency..... 333

Société de Thérapeutique de Paris..... 334

THE BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF PATHOLOGY AND BACTERIOLOGY: Hæmochromatosis.—Relation of Carcinoma to Infection.—Experimental Tar Cancer in Mice.—Renal Function Tests. — Demonstrations. — Pathological Museum..... 334

SECTION OF PHYSIOLOGY, PHARMACOLOGY, THERAPEUTICS, AND DIETETICS: Various Uses of the "Hot Wire."—The Ætiology and Treatment of Varicose Ulcers. — Anaphylatoxin. — Poison Organs and Venoms of Poisonous Fishes.—The Physiology of Oral Hygiene 338

SECTION OF DERMATOLOGY: The Association of Skin Tuberculosis with Visceral and other Tuberculous Manifestations.—Cutaneous Sensitisation and Focal Sepsis.—Skin Diseases in Pensioners..... 339

SECTION OF UROLOGY: Diagnosis and Treatment of Cystitis.—Contusions of the Kidney. — Open Operation for Removal of the Prostate 342

REVIEWS AND NOTICES OF BOOKS.

Epidemic Respiratory Disease. By Eugene L. Opie, Francis G. Blake, James C. Small, and Thomas B. Rivers..... 343

A Text-book of Medical Jurisprudence and Toxicology. Fourth edition. By John Glaister, M.D., D.P.H., F.R.S.E..... 344

Artificial Light. By M. Luckiesh..... 344

Brain. Vol. XLIV., Part 1..... 344

Journal of Industrial Welfare 345

Journal of the R.A.M.C..... 346

London Panel Committee Gazette..... 346

NEW INVENTIONS.

Improved Devices for Bladder Drainage and Closure (Dr. J. MacMunn)—(*Illustrated*) 346

LEADING ARTICLES.

CANCER AND THE PUBLIC.—(*Illustrated*)..... 347

ANOXÆMIA IN CLINICAL NEUROLOGY..... 348

MENTAL HYGIENE..... 349

REGIONAL MEDICAL OFFICERS 349

ANNOTATIONS.

Professional Secrecy..... 350

The International Aspects of Child Welfare Work..... 350

The Teaching of Obstetrics at Leeds..... 350

Paying Poor-law Patients in Manchester..... 351

Composition of Human Fat... 351

A Model Village in U.S.A..... 351

The Future of Red Cross Clinics..... 352

Tumours of the Bony Chest Wall..... 352

Stock Allegations against Insurance Doctors..... 352

Lunacy and Divorce..... 353

INDEX NOTICE.

THE LANCET, Vol. I., 1921..... 353

SPECIAL ARTICLES.

Water-supply: Considerations arising out of the Drought... 353

Factory Hygiene in 1920. Report of the Chief Inspector of Factories and Workshops..... 355

Medicine and the Law: The Duration of Pregnancy..... 357

India..... 357

Czecho-Slovakia..... 358

PUBLIC HEALTH SERVICES.

Annual Reports of Medical Officers of Health: Norwich, Stoke Newington, Blackpool, Ramsgate..... 359

THE SERVICES.

Army Dental Corps: Amended Rates of Pay..... 360

The Indian Medical Service and Japan..... 360

Royal Naval Medical Service 360

Royal Army Medical Corps.... 360

OBITUARY.

Wilfred W. E. Fletcher, M.B., D.P.H. 363

Arthur Bowen Richards Myers, M.R.C.S., L.S.A..... 364

Edgar Freeman Morris, M.R.C.S., L.S.A..... 364

CORRESPONDENCE.

The Voluntary Hospital System (Sir W. J. Collins)..... 361

The Ultra-Microscopic Viruses (Dr. James Walter McLeod) 361

The Supposed External Effects of Human Vision (Mr. A. A. Campbell Swinton) 361

An Instrument which is Set in Motion by Vision (Dr. C. Russ)..... 362

The Fæces in Alimentary Disorders (Dr. Robert Coope)... 362

The Objective Study of the Neuroses (Dr. Haydn Brown) 362

Labour after Criminal Abortion..... 362

Private & Panel Practitioners 363

An Appeal from the Russian Red Cross (Dr. L. Zeitline).. 363

MEDICAL NEWS.

University of London..... 364

Royal College of Physicians of London..... 364

Royal Colleges of Physicians of London and Surgeons of England: Pass-list..... 364

Review of Pension Appeals.... 334

Wallasey Sanatorium Committee..... 343

Hospital Grants and Wages of Employees..... 356

St. Thomas's Hospital Medical School..... 365

Westminster Hospital: Annual Dinner..... 365

Donations and Bequests..... 365

Manchester: Precautions against Infantile Diarrhœa 365

Medico-Psychological Association of Great Britain and Ireland..... 365

The Dentists Act..... 366

Middlesex Hospital Medical School..... 366

Edinburgh Post-graduate Courses, 1921..... 366

County of London Panel Committee..... 366

United States Public Health Service..... 366

Leeds Workpeople's Hospital Fund..... 366

Coroners' Inquests in Ireland 368

PARLIAMENTARY INTELLIGENCE.

House of Commons: Milk for Tuberculous Persons.—Opium Cultivation in China. —Cost of Health Insurance to the Workman.—Criminal Law Amendment Bill.—Poison Antidotes Bill.—Overcrowding at Dartmouth..... 367

NOTES, SHORT COMMENTS, &c.

The Training of Epileptics in the United States..... 371

The Medical Department and Military Morale..... 372

Public Health in Tasmania ... 372

Medical Diary..... 366

Appointments.—Vacancies ... 369

Births, Marriages, and Deaths..... 369

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Dr. Bond began by claiming justification for the selection of this topic on account of the widespread interest incited by some of the problems presented during the war in connexion with cases of nervous and mental breakdown, and the fact that sufficient time has now elapsed for the necessary stride forward in which to take stock of the war's lessons, to appraise the permanency of any apparent change[1] in incidence of mental maladies, and to revise demands—shaped at first on idealistic lines—in conformity with available resources.

The restraining influence of the nation's straitened circumstances would, he said, have rendered the subject impossible of selection, but for the conviction that an unfortunate amount of mental therapy is being neglected, and that a large proportion of it can be successfully undertaken without fresh expenditure of money. As an incentive to put in hand what can now be overtaken—delay in doing which is negligent—and to make quite clear what is required either financially or by way of legislation before the remainder of the work can be even commenced, something in the nature of a thoroughly understood scheme of mental medical service seemed wanted. A scheme for general medical services, including several special ones, but with very small reference to psychological medicine, having been propounded from an authoritative source—the Consultative Council on Medical and Allied Services, established under the Ministry of Health Act of 1919—it seemed desirable to take this as a basis for consideration how best to give effect to the dictum that the mental health of the nation was of no less moment than its physique.

The Council's report, and the reports of the Welsh Council, the Council of the Scottish Board of Health, and of the Irish Public Health Council were reviewed by Dr. Bond, to emphasise the small extent to which the growing needs of psychological medicine had so far been considered on anything like comprehensive lines, despite the rising interest in mental disorders and in the maintenance of mental health—of which interest several notable examples were cited. At the same time note was taken of a regrettable falling-off, during at least the last ten years, in the financial support hitherto given to mental hospitals (13 in England and Wales) supported by voluntary contributions; as a consequence there were now many persons of good education and social standing being treated in public mental hospitals in association with others without these qualifications, whereas these 13 hospitals were founded specially for such cases. For lack of funds the hospitals were not able to do anything like the amount of charitable work they once did, and often were unable to add the structural arrangements demanded for modern lines of treatment. This want should be made widely known, for these excellent hospitals had a fine record worthy of generous support.

LUNACY LAWS IN RELATION TO MENTAL TREATMENT.

Dr. Bond then went on: So much misunderstanding still prevails, both in professional and lay circles, concerning the legal aspect of the topic, that before attempting to show what comprehensive arrangements should be aimed at, which of these can be made forthwith and which must await either legislation or the removal of financial restrictions or both, it seems advisable to set the legal position out afresh and once again to make clear how the Lunacy Laws, while designedly protecting the liberty of the subject, obstruct the adequate treatment of mental disorders and render improvement in schematic organisation impossible—save in one direction. The easiest way to understand the matter, I suggest, is to consider mental cases as administratively divisible into (*a*) the uncertifiable, and (*b*) the certifiable (under either the Lunacy or Mental Deficiency Acts), and the certifiable cases as subdivisible into (i.) the "willing" (those who have the mind to recognise they are mentally ill and desire treatment), (ii.) the "indifferent" (those who are too mentally ill to raise any objection to proposed treatment), and (iii.) the "unwilling" (those who, whether they recognise their mental illness or not, are hostile to any curtailment of their liberty involved in treatment). Ostensibly the law puts no obstacles in the way of either out-patient or in-patient treatment for uncertifiable cases; nor does it with respect to out-patient treatment for certifiable cases. With respect to both classes of cases, that indeed is an accurate statement as regards out-patient treatment. But the dividing line between uncertifiability and certifiability is notoriously thin, and the former condition readily, and often suddenly, passes into the latter; so that, in practice, fear of incurring penalties attached to undertaking in-patient treatment contrary to the provisions of the Lunacy Acts (section 315 of the Act of 1890) results in a large number of uncertifiable cases receiving no treatment, and in inadequate arrangements for it; and therefore the position of uncertifiable cases in need of mental treatment as in-patients cannot be ignored. It is, however, in connexion with in-patient treatment for certifiable cases that the law, because of the public's dislike of certification, proves such a hindrance to early treatment and obstructs the making of arrangements on lines which will conduce to treatment being sought more promptly, to better study and increased research in mental disorders, and therefore to all-round progress in the specialty. The obstruction lies in the fact that, excepting the almost negligible amount of voluntary treatment permitted, which is restricted in place to the mental hospitals supported by voluntary contributions and to licensed houses, in all three classes of certifiable cases—i.e., not only the unwilling, but also the willing and the indifferent—certification must be carried out before any form of in-patient treatment can be legally secured.

IMPORTANCE OF OUT-PATIENT TREATMENT.

It is thus manifest that the sole direction in which an extension of existing mental medical service can be made without legislation is in out-patient work—preferably at general hospitals. Such work is in progress at some of the London hospitals and at a very few provincial ones. A notable example of what can be done in this sphere may be cited in the work going on in the out-patient department of the Radcliffe Infirmary at Oxford, details of which will be given later in a paper to the Association by Dr. T. S. Good. It

[1] For example: While during the quinquennium 1910–14 the average number of female direct admissions into institutions for the insane and into single-care (in England and Wales) was 11,668, or a ratio of 6·21 per 10,000 population, the average number during the three war years 1915–17 was 10,894—i.e., a ratio of 5·59 per 10,000; but the admissions during the years 1918–20 were 11,687, 12,060, and 12,003 respectively, with corresponding ratios of 5·93, 6·15, and 6·07: and it may be of some significance that, while in pre-war years there was no marked seasonal or monthly variation in the number of admissions and such as obtained was never high in November, yet in 1918, while the number of female admissions in September and October were respectively 7·2 and 7·8 per cent. of the total female admissions during that year, the percentage during November was no less than 10·1, and the maximum number of reception orders made on any given day occurred on the day following the Armistice. These figures, for what they are worth, have been restricted to females because those relating to males would be vitiated by the large number of the male population serving with the Forces.

was urged that every effort ought to be made to pursue this direction, and to institute similar work at as many centres as practicable without waiting for the legislation requisite to enable arrangements in other directions to be made. [Dr. Bond then offered suggestions as to how best to bring this about.] On the lines suggested, a very valuable amount of out-patient work could be put in hand, not only without expenditure but at a saving of public funds.

WIDENING THE SCOPE OF TREATMENT BY VOLUNTARY ADMISSION.

To make clear the meagre extent to which voluntary in-patient treatment is available, it may be pointed out that of the three kinds of institutions for the insane—county and borough mental hospitals, registered hospitals (the 13 supported by voluntary contributions), and licensed houses—only the registered hospitals and licensed houses can receive voluntary admissions, and that, as 86 per cent. of the 22,000 patients annually admitted into all institutions for the insane go to the county and borough hospitals, it is obvious that such voluntary treatment as the law allows is, indeed, almost negligible. The procedure for voluntary admission into the registered mental hospitals is commendably simple, is entirely free from formality, but is subject to notification and supervision by the Board of Control. It has worked well, and there would seem no valid reason why it should not be made equally as simple for licensed houses, or why it should not be extended to the county and borough mental hospitals, where it is, in point of fact, most urgently needed, and still more generally—such as, to general hospitals, other suitable institutions, properly organised nursing homes, and to single care: always provided that supervision is adequate. Subject to this proviso, there is some reason to think that notification of the patient's admission without mention of name would be sufficient—which would accord with public sentiment and tend to popularise early and preventive treatment—and to doubt whether even notification of each admission is necessary as respects public hospitals and those supported by voluntary contributions. Legislation on these lines would meet the necessities of the first subdivision of certifiable cases—those cases which, for sake of brevity, are here termed the "willing," and some of the arrangements could then at once be made, again without incurring fresh expenditure.

PERMISSIVE LEGISLATION TO AUTHORISE RETENTION.

But legislation to widen the scope of voluntary treatment would only very partially alleviate the present position. To be effective, either therapeutically or educationally, it should take note of and mitigate the hardship of the law's present attitude towards those members of the second subdivision of certifiable cases—namely, the "indifferent"—whose mental illness is in an early stage and is presumably recoverable. In soliciting sufficiently comprehensive legislation, it should always be remembered that the many who have the mind to volunteer for treatment, but whom the law does not permit to do so—the "willing"—and the very many more who are too ill to object—the "indifferent"—but whose responsible relatives have every confidence in the treatment proposed though objecting to certification as a preliminary step, together constitute the majority of recoveries from certified attacks of mental disorder; that these recoveries number some 35 per cent. of the total admissions; and that, of these recoveries, 44 per cent. take place within six months of the alleged commencement of the illness, and 73 per cent. within a year. It is on behalf of both these types of cases, the "willing" and the "indifferent"—but not on behalf of the "unwilling" nor with respect to protracted cases among the "indifferent"—that urgent appeal should be made for legislation which would permit medical freedom of action for a short, but sufficient, time in which recovery may take place—a period of six months has been suggested, to be extended on adequate grounds. The desired legislation would authorise, without certification, admission and retention but not detention; it would be permissive in character and would not necessarily impose expenditure of money upon any authority; though to complete the scheme on comprehensive lines, educationally as well as therapeutically, considerable expenditure would probably be necessary later and when funds are available. Under such permissive legislation opportunity would, in the meantime, be afforded to test, if need be, the soundness of the proposals. Surely those of the public who, in the face of such limited and reasonable proposals, still raise objections on the score of the liberty of the subject are making liberty a travesty and a despotism raised out of a will-o'-the-wisp abstraction.

THE CONSULTATIVE COUNCIL'S SCHEME.

On the assumption that this relief by legislation will sooner or later be granted—but not until then—it may readily be seen how admirably the Consultative Council's scheme can serve the requirements of psychological medicine:—

Domiciliary service, it is true, will continue to be but little employed in mental cases until undergraduate instruction in the subject is better provided for; after which the general practitioner can be counted upon as a powerful agent in promoting mental hygiene. *Primary centres*, where provided with out-patient departments—but only if so provided—could render signal service in the treatment of early cases and in preventive work. *Secondary centres* would serve the same purpose, and should also provide mental in-patient service—but, pending the legislation referred to, they cannot do the latter; adequate in-patient accommodation involves the erection, or provision by adaptation, of psychiatric clinics as annexes to general hospitals; their erection would involve expenditure which it is useless to urge at present. The *University centres* (with teaching hospital and medical school) would afford, but with greater elaboration, the same facilities as at secondary centres, and in addition would supply organised undergraduate and post-graduate instruction, the latter leading to a diploma in psychological medicine: for teaching purposes, besides arrangements for the more purely scientific subjects, a clinical triad is needed—psychiatric clinic, neurological department, and the public mental hospital and institution for mental defectives; in addition, instruction should be accessible in mental hygiene of childhood, in criminology and the psychological aspect of industrial hygiene.

It is at the university centres that present efforts should be concentrated, and it is here, when money is available, that the first psychiatric clinics should be erected: an obvious opportunity exists here for the intervention of someone interested in this great need and generously disposed.

Regarded as supplementary services, our public mental hospitals (the 97 county and borough mental hospitals, with over 100,000 beds, the 13 voluntarily supported hospitals, with over 2000 beds, and the as yet few institutions for defectives) constitute no mean asset in any general scheme of medical and allied services. While emphasis can be laid on their general excellence, any defects or deficiencies should not be lost sight of. [Dr. Bond here took the opportunity to ventilate such matters as classification of patients, dietary, freedom of egress, clinical facilities and records, and the medical staff—including (i.) the institution of a visiting staff as consultants in branches other than mental, (ii.) the better organisation of the resident staff, and (iii.) their at present restricted position in the public service.]

FLUIDITY OF SERVICE DESIRABLE.

While regarding each of these three items relating to the medical staff as of much moment, the position in the public service of the resident medical staff of public mental hospitals and institutions for defectives may be urged as a matter of the highest importance, and, apart from securing legislation, as the key to any chance of progress. At present they are restricted

in their work each to his respective institution; instead of which they should be regarded as public officials whose specialist services should be freely available at all centres in their locality where either mental treatment or the diagnosis of mental condition is required as part of the public's medical and allied services. In short, fluidity of service should be brought about, which in most instances will need not legislation, but an alteration in the institution's rules, which are so far statutory that, having received the Secretary of State's (now the Minister of Health's) approval, they have the force of law. This fluidity of service would enable much preventive and early treatment, now neglected, to be performed, nor would that be at the expense of the medical staff's institutional duties; on the contrary, the constant touch kept with the periphery, the witness of the operation of predisposing factors, and the better knowledge of premonitory symptoms and early stages of mental disorders, would broaden the outlook of the medical staffs, and much enhance their effectiveness within the institution.

Fluidity of service is required, not only for routine therapeutic work at clinics and in out-patient departments of general and other hospitals, but also for work in at least two of four other important relationships which psychological medicine ought to establish. These four are its relations (i.) to medical services for school children—details of which will be supplied in a paper from Dr. G. A. Auden, (ii.) to criminology—the valuable work being carried out at H.M. Prison at Birmingham may be cited as an example, (iii.) to industrial hygiene—concerning which an account will be contributed later by Dr. C. S. Myers, and (iv.) to the naval and military medical services; and it is as regards the first two that this fluidity of service is chiefly required.

As ancillary to these matters, allusion may be made to health visitors, the value of whose services in relation to mental treatment is insufficiently realised in this country. They are at present only represented, as respects psychological medicine, in connexion with the work of the Mental After-Care Association, and with that of the Central Association for the Care of the Mentally Defective. They should be recognised as indispensable throughout the whole of the scheme of work that has been outlined, and our public mental institutions could do much in promoting arrangements for the training of suitable persons.

In conclusion, Dr. Bond added: But for the obvious utility of specific reference to, and falling in line with, the Consultative Council's scheme, my address might perhaps better have taken "Mental Hygiene" as its title; for, indeed, such suggestions as I have been able to offer have as their ultimate goal the promotion and preservation of mental health. Even should all these proposals mature, pruned and added to as none better than the Medico-Psychological Association is capable of doing, all the work requisite for this preservation will not be overtaken. It is therefore of good augury that an idea is afloat to establish in this country a National Committee for Mental Hygiene on the lines of the body of men and women who, under that name, have been for the past 13 years doing such magnificent work in the United States, and out of whose example similar committees have sprung up in the Dominion of Canada and are contemplated elsewhere in the Dominions and in France.

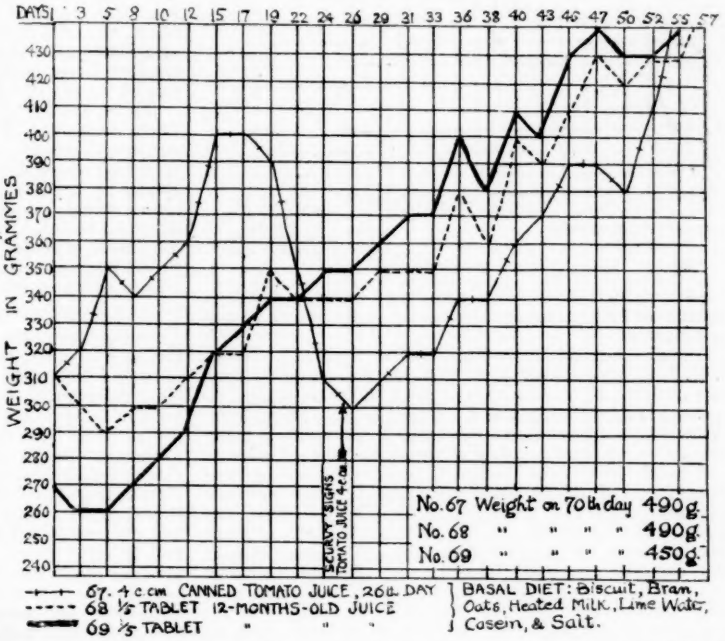
FURTHER EXPERIMENTS ON THE PRESERVATION OF LEMON JUICE AND PREVENTION OF SCURVY.

BY SIR PERCY W. BASSETT-SMITH, K.C.B., C.M.G., F.R.C.P. LOND., F.R.C.S. ENG.,
SURGEON-REAR-ADMIRAL, R.N.

IN previous papers[1] I have drawn attention to a method of making a portable, palatable, and efficient dried preparation of lemon juice, which it was hoped would be particularly useful for landing parties in special expeditions of naval character, or, more particularly, for sledging work in arctic and antarctic regions. It was, however, necessary to test these tablet forms after prolonged periods of storage, for the time element is generally recognised as being one of very great importance in reducing the antiscorbutic value of most preparations.

I have therefore tested healthy young guinea-pigs of about 300 g. weight with tablets which had been stored in the laboratory at room temperature for over 12 months. The basal diet consisted of ships' biscuit, bran, oats, casein, salt, and lime-water, with 60 c.cm. daily of milk so heated as to destroy any antiscorbutic vitamin. Each day one-fifth of a tablet was given, equivalent to 4 c.cm. of fresh lemon juice. The animals under experiment have over a period of 70 days showed no signs of scurvy; they are bright and healthy and have steadily gained weight, as shown by the curves in the annexed chart. Control animals, without antiscorbutic factors, show signs of scurvy about the 21st day and then rapidly lose weight (Chart 1).

CHART 1.


DAYS
WEIGHT IN GRAMMES
SCURVY SIGNS
TOMATO JUICE 4 c.c.
No. 67 Weight on 70th day 490g.
No. 68 " " " " 490g.
No. 69 " " " " 450g.
67. 4 c.cm CANNED TOMATO JUICE, 26th DAY
68 1/5 TABLET 12-MONTHS-OLD JUICE
69 1/5 TABLET
BASAL DIET: Biscuit, Bran, Oats, Heated Milk, Lime Water, Casein, & Salt.

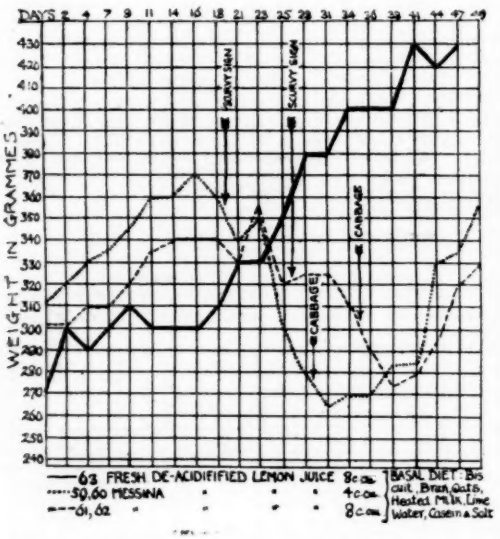
It has been previously shown that short periods of heating, even at boiling point, only slightly reduce the antiscorbutic value of lemon juice, and it is probable that these tablets could be produced on a commercial scale by a process similar to that used for the preparation of Nestlé's condensed sweetened milk, which contains most of the original vitamins[2]; the milk is heated for about three and a half minutes

[1] THE LANCET, 1920, i., 1102, and ii., 997.
[2] Hume, E. M.: Bio-Chem. Jour., 1921, vol. xv., No 1, pp. 163–166.

to a temperature of 80° C., and is then condensed in vacuo at 50° C. for about three hours to a viscid fluid. The method, though not quite so satisfactory in retaining all the vitamins as my process of evaporation at room temperature, would be more practicable on a large scale.

During the past months a sample of lemon juice extracted from the whole lemon at Messina has been received and tested at the R.N. College, Greenwich. The fluid was turbid and contained some of the rind oils; it appeared to have undergone some changes since collection. This, when strained and de-acidified and used in quantities up to 8 c.cm. daily, had absolutely no preventive effect. The scurvy symptoms came on early, and were even more marked than usual from the 15th to the 21st day, and death occurred unless an efficient antiscorbutic was given. A control which received the same quantity of de-acidified juice prepared from fresh lemons in the laboratory showed no signs and steadily gained weight (Chart 2). A second sample of lemon juice from

CHART 2.



Messina which had been preserved with potassium metabisulphite gave equally bad results when tested biologically.

Tinned tomatoes have been found by M. H. Given, H. B. McClugage, and A. F. Hess[3] in America, to have very definite antiscorbutic powers; these have not, so far as I know, been tried in England. They form a very palatable and excellent food. It seemed desirable to carry out some experiments here, for such food might easily be included in the ration of sea-going ships under special conditions. The animals were placed on the usual basal diet, and to this was added daily 4 c.cm. of the tinned tomatoes from brands bought in the open market. The guinea-pigs very quickly got used to the new addition to their diet, and ate it with avidity. When it was used as a prophylactic the animals steadily gained weight; in others, which had been allowed to develop definite scurvy symptoms with marked wasting, it rapidly established a diminution of the symptoms and a steady gain in weight, the results being excellent. Charts are given showing curves of the various experiments, but full protocols of all the animals under examination are not included for want of space.

Conclusions.

1. The tablets prepared in the cold have retained their efficiency for over 12 months.

2. Commercial lemon juice made from the whole fruit received from Messina, which had not been specially protected from heat, had lost all its anti-scorbutic properties when tested in England, confirming the work of Miss Alice Davey.[4]

3. Tinned tomatoes in doses of 4 c.cm. act efficiently against scurvy in guinea-pigs, both as a prophylactic and a curative agent.

[3] Given, McClugage, and Hess: Proc. Soc. Exp. Biol. Med., 1921, Feb. 16th.

SCURVY:

A SYSTEM OF PREVENTION FOR A POLAR EXPEDITION, BASED ON PRESENT-DAY KNOWLEDGE.

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AND
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MEMBERS OF THE SHACKLETON-ROWETT EXPEDITION; LATE MEMBERS OF THE SHACKLETON ANTARCTIC EXPEDITION.

SCURVY has played a very prominent part in the history of Polar exploration, and a close examination of records shows that its presence or absence has borne a close relationship to success and failure. In the light of recent knowledge it is probable that many of the tragedies which have occurred were due to scurvy, though the condition was not recognised or reported as such at the time. It may easily be understood that in the preparation for a modern expedition the prevention of scurvy is a most important consideration, and an account of the actual steps taken may be of some interest. Until quite recently little attention has been directed to this and other deficiency diseases by the bulk of the medical profession in the British Isles, where cases of adult scurvy in an advanced condition have been very rare; and the signs of early scurvy are so indefinite that they are difficult to recognise, unless they occur simultaneously amongst a large body of people leading similar lives, and under conditions where its onset might be expected.

There are several reasons for the interest which has been aroused. Numerous cases occurred in Europe under the severe conditions of famine imposed by the war, and allowed of unprecedented opportunities for its study by medical men in the different zones. Moreover, much greater attention has recently been directed to infantile scurvy and the factors influencing its onset, especially the effects on milk of drying and preserving processes, and the possibly detrimental effects of pasteurisation and sterilisation.

Modernity of Deficiency Diseases.

It was formerly the custom to regard pathological changes as due always to the addition to the system of some harmful foreign substance; the discovery that functional disturbance and tissue changes may be due to the lack of some essential body has opened up a new conception of the ætiology of disease. Moreover, deficiency diseases are to a great extent modern diseases, due to the tendency of people to crowd together into large towns, which necessitates the comparatively large use of preserved foods. It has been very fully demonstrated that these essential bodies or "vitamins" are present in foods in the natural state and in fresh condition, but that their functional activity is much diminished or totally destroyed by many preservative processes. Since the war remarkable interest has been aroused, and the word "vitamin" figures largely, not only in medical literature, but in the advertisement columns of the daily papers, and has almost become a household term, though its meaning is by no means always clear.

Early Antiscorbutic Data.

The apathy and lack of general interest which formerly existed with regard to these subjects made things very difficult for those responsible for the organisation of past expeditions; moreover, the

[4] Davey, Alice J.: Bio-Chem. Jour., 1921, vol. xv., No. 1.

literature dealing with the subject was extremely meagre, much of it in foreign languages, and available only to those with access to large and well-stocked medical libraries. Little attempt was made to keep it up to date. Reference to the history of Polar exploration, and the records of early voyages of discovery, showed that reports in connexion with antiscorbutics, though often dogmatically made, were unreliable, and contradictory results were obtained from apparently similar methods of prevention. The number of possible fallacies in deductions drawn and the probable influence of unconsidered factors, showed that no real assistance could be drawn from this source. Certainly the value of fresh foods, especially fruits and vegetables, had long been recognised, as is seen by the memoirs of the famous Captain Cook, who made use of them on every available occasion, and whose voyages were remarkable for the absence of scurvy in the advanced stage; for in those times the disease was frequently not recognised until it had reached an advanced stage. The improved conditions resulting from Board of Trade regulations in connexion with seamen showed a marked diminution in the number of cases occurring at sea; and this diminution was largely attributed to the use of lime juice, which for many years held sway as a sure preventive of scurvy, and a certain cure for it when it had set in.

Method Adopted by Sir E. Shackleton.

In 1913–14, when the last expedition was in process of preparation, a reliable system of prevention was particularly difficult to form, for lime juice had been shown to be of doubtful value, and the "vitamin theory," though established, was still in its infancy; and of the factors influencing the vitamin comparatively little was known. It had not been shown that the Mediterranean lemon possessed a much greater antiscorbutic value than West India lime; the failure of lime juice was attributed to the high temperature used in its concentration. Nevertheless, Sir Ernest Shackleton, who fully realised the importance of strong anti-scurvy measures, and who had made himself fully cognisant with the state of knowledge at that time, took every possible step to secure them, relying not on any one preparation, but on providing a well-balanced dietary. How far the method was effective in this respect the results of recent workers, especially McCarrison,[1] have shown, and all Sir E. Shackleton's expeditions have been remarkable for the absence of any signs of scurvy. The system adopted lay in the provision on the ship of good foods, supplied in great variety and in ample quantity, great care being taken to see that it was served cleanly, and in as attractive a manner as conditions permitted. Living quarters were made as bright as possible and kept scrupulously clean. Everything possible was done to maintain general good health and a high morale. For sledge journeys a preparation of lime juice was made in the concentration of which low degrees of heat were used, and the product was put up in air-tight capsules, each capsule containing a ration for one day. In the light of more recent knowledge this ration was probably not rich in active vitamin, but its efficacy was never tested, for no extended sledge journeys were carried out until after the loss of the *Endurance*. For 10½ months the party lived on a severely restricted and monotonous dietary, but it was composed largely of fresh meat.

Epitome of Results with Different Antiscorbutics.

Between that time and the present, however, a great deal of work has been done, and great advances have been made both along the lines of clinical investigation and direct experiments on animals.

An epitome of the results having a practical application is here given:—

Lemon Juice.—The historical investigations of Chick, Hume, and Skelton[2] and of A. H. Smith,[2] followed by experiments on animals at the Lister Institute by Chick and Hume, have displaced lime juice from its time-honoured position as an antiscorbutic, but have shown that lemon juice is very rich in active vitamins and has in the fresh state a high antiscorbutic value. It withstands drying under certain conditions. Holst and Frolich pointed out that by evaporating fresh juice in a vacuum the efficacy was retained, and Harden and Zilva that by drying it in an acid medium an active residue is left. Admiral Bassett-Smith[3] has elaborated these methods, and with a view to prophylaxis in the Navy has prepared a convenient and portable product by evaporating the juice in vacuo over sulphuric acid; a viscid syrupy mass is left which may be preserved by the addition of 10 per cent. alcohol—which also prevents freezing—or by making it into tablets. In both forms it has been shown to retain its antiscorbutic value. There has not yet been time to test fully its keeping qualities over a number of years, but there is no doubt that these preparations will be of the utmost value in Polar exploration, and in other circumstances where similar conditions are met with. The amount estimated as necessary per man per day for prophylaxis is the equivalent of half a lemon in the fresh state.

Orange Juice.—Orange juice has also been shown to have high antiscorbutic value, and Givens has prepared a dried product, containing active vitamin, which has retained its efficacy after two years' storage.

Milk.—Chick, Hume, and Skelton have shown that milk in the fresh state has a comparatively low antiscorbutic value which varies according to whether the cows from which it was obtained were fed on fresh greenstuffs or not. Milk powder, however, may be comparatively rich in vitamins, but this depends largely on the manufacturing process to which it has been subjected.[4] The "spray" process of drying milk has been shown to be very detrimental to the antiscorbutic vitamin, but the "roller" process is much less so. Milk prepared by the Just-Hatmaker process has been shown by Hess and Unger[5] to be efficacious, both for the prevention and treatment of infantile scurvy. In this it is poured in its fresh state on to two revolving drums, heated to a temperature of over 100° C., on which it forms a film, and is scraped off within a few seconds by a knife edge into a container. Other factors essential to a good powdered milk are good pasturage, healthy cows, hygienic methods of dealing with the milk, and as little exposure to air as possible during the whole process.

Vegetables.—Most fresh vegetables are richly antiscorbutic, but dried vegetables have been shown to be almost totally devoid of active vitamin. Holst and Frolich, however, have prepared an active dry preparation of white cabbage by keeping out all moisture and preventing hydrolysis, but evidence in connexion with it is scarce. Vegetables preserved in tins by the process of canning are also of little value. A notable exception is canned tomatoes, which Hess and Unger have shown to be antiscorbutic, and have used it with success in infantile scurvy. It has also been adopted for use in the United States Army. Campbell and Sherman state that after boiling for one hour, tomato juice loses only 50 per cent. of its water-soluble C vitamin, and about 70 per cent. after four hours. The rate of loss is increased if the juice be first made alkaline or neutral.

Germinated Pulses and Cereals.—Furst was the first to demonstrate the presence of active vitamin in germinating cereals. Chick, Hume and Delf at the Lister Institute have carried on further investigation, and the result is one of importance in Polar exploration, for the dried pulses and cereals can be easily carried and made to germinate as the occasion requires. Wiltshire applied this treatment clinically in dealing with an outbreak of scurvy amongst Serbian soldiers, and he describes it as being superior in value to treatment by lemon juice.

Meat.—Preserved meats may be regarded as having no antiscorbutic value at all. Dietcher, Pierson, Biester, and others found that small amounts of fresh beef had no appreciable effect in the prevention of scurvy. There are numerous instances, however, in the history of exploration, which show that fresh meat is able both to prevent and to cure scurvy, provided enough of it be eaten. It has been suggested that it must be eaten raw or lightly cooked, but our own experiences in the last Shackleton expedition showed that this is not necessary.

Factors Influencing the Vitamins.

The anti-scurvy or water-soluble C vitamin has been shown to be more sensitive to destructive influences than either the fat-soluble A, or water-soluble B vitamins. The influences most detrimental to its activity have been considered to be heat, drying, exposure to air, ageing, and an alkaline reaction. The precise factor acting on the vitamin has not been clearly shown. With regard to heat, the experiments of Miss Delf tended to show that intensity of heat is less destructive than prolonged heating at a lower temperature. Results, however, proved puzzling, and a more recent experiment by Zilva, carried out at the Lister Institute, shows that probably an undue

amount of importance has been given to heat, and that oxygenation has played a more important part. The following are extracts from an article appearing in THE LANCET, March 5th, 1921:—

It was found that bubbling air at ordinary temperature through an antiscorbutic solution (of lime juice) inactivated it. On the other hand, on boiling an active solution for two hours in an atmosphere of CO_2, no marked diminution in the activity could be recorded, whilst on boiling a similar solution for one hour during which time air was bubbled through, almost the entire activity was lost. . . . . .

From the administration of daily doses of 1·5 c.cm., 4 c.cm., and 6 c.cm. of the juice boiled in an atmosphere of CO_2 for two hours, no inactivation perceptible by our present technique could be established. It is probable that more light will be thrown on this question in the near future.

In spite of these great strides, and the data now available, it must be admitted that the knowledge of the subject is still very incomplete, both as to the pathogenesis and exact nature of scurvy, and as to the factors influencing the vitamin. Moreover, the matter (in its modern aspect) is so much in its infancy that it has not been possible to apply the test of time even to the extent of the few years during which an expedition is cut off from supplies.

Pathology of Scurvy.

The pathology of scurvy, in so far as the results of autopsies are concerned, has been known for many years and carefully described by independent observers, but the pathogenesis is still incomplete, and investigation in this direction is a matter of extreme difficulty. The path, however, has been broken, and much new light has been thrown on the subject by the work of McCarrison, recently embodied in a single volume.[1] It has been shown that there is a definite pre-scorbutic stage, characterised by a general depressed vitality, which persists for a varying period before the second stage, the stage of toxæmia, sets in, producing the symptoms more usually considered as characteristic of scurvy. The symptoms of the first stage are a feeling of unusual tiredness and lack of interest in things generally, a greater readiness to take to bed, and a greater reluctance to get up. There is shortness of breath on exertion, and the patient suffers from frequent headache and vague "rheumatic pains." The pulse-rate is increased, and Hess has noticed in children a tachycardia similar to that of exophthalmic goitre. Clinical observers have noticed a dilatation of the right side of the heart, though there is generally some shrinkage in that organ as a whole. From clinical observations made in Russia, where one of us had the opportunity of seeing a very large number of cases occurring in adult men, it appears that this stage may persist for a considerable period, weeks or even months elapsing before more marked symptoms arise. McCarrison describes during this period "a state of ill-health of the bowel" with "congestive and hæmorrhagic lesions in the tract." The second stage, which is one of a profound toxæmia, produces, in more or less marked degree, the symptoms of profound depression, dull earthy complexion, bleeding, swollen gums, and other conditions more usually associated with scurvy, and in the advanced stage producing the ugliest of clinical pictures. Of this condition the Austrian, Kramer, wrote, "The scurvy is the most loathsome disease in nature," and the Canadian poet, Service, forcibly, if somewhat crudely, writes:—

". . . . the scurvy softens your bones
And your flesh dents in like putty, and you spit out your teeth like stones."

The depressing effect of an outbreak of this disease during an expedition can be imagined. In the large series of cases seen by us in Russia the swelling and sponginess of the gums was a very characteristic but not altogether a constant feature; we saw some very advanced cases with pronounced symptoms in which the gums were not swollen, though bleeding occurred readily. In these cases the teeth, though loosened in the sockets, were in excellent condition, with absence of caries, which points to a probable relationship between the two conditions. The toxæmia, which is accompanied by severe metabolic disturbance, is almost certainly gastro-intestinal in origin, and in connexion with this the following extracts, having a direct bearing on the subject, are made from Robert McCarrison's "Studies in Deficiency Disease."

For the sake of brevity in this article, the wording has in places been considerably altered:—

1. The health of the gastro-intestinal tract is dependent on an adequate provision of accessory food factors, especially vitamines B and C. . . . . Vitamine C . . . . is especially concerned in the production of congestive and hæmorrhagic lesions in the tract, and evidences of these may be found in animals which have not exhibited during life any clinical manifestation of scurvy in a noteworthy degree. A state of ill-health of the gastro-intestinal tract may thus be a pre-scorbutic manifestation of disease due to insufficient vitamine intake. . . . .

2. The disorder of the intestinal tract is enhanced when the deficient food is ill-balanced.

3. In general the disorders resulting in this situation from deficient foods are:—(*a*) Congestive, necrotic, and inflammatory changes in the mucous membrane, either involving the entire tract or limited to certain areas; (*b*) degenerative changes in the neuro-muscular mechanism, tending to dilatation of the stomach, ballooning of areas of small and large bowel, and probably also to intussusception; (*c*) degenerative changes in the secretory glands, such as must cause grave derangement of digestive and assimilative processes; (*d*) toxic absorption from the diseased bowel; (*e*) impairment of the protective resources of the mucosa against infecting agents, resulting not only in infection of the mucous membrane itself, but permitting of passage into the blood stream of micro-organisms from the bowel.

4. There is a definite individual idiosyncrasy.

Of the deleterious effects of food deficiencies on the endocrine glands, and the consequent disturbance of metabolism, we have said nothing, though their importance in the pathogenesis of scurvy is fully recognised. The exact processes which take place in this connexion are not clear, and for our present purpose we do not see that we can draw any practical conclusion from the present-day knowledge of the subject. The changes in these glands do not seem to result from the bowel lesions, but have a certain amount of influence on their production. McCarrison says: "Whatever be the true nature of vitamines, they resemble in their action that of hormones, whose function is to stimulate metabolism." He shows that some of the endocrine extracts "can delay in onset, and alleviate, though not permanently dispel, the symptoms of polyneuritis in pigeons suffering from deprivation of vitamine B." Extracts of the thyroid, or of some of the other endocrine glands, might therefore be of use in staving off the more pronounced effects of scurvy, and in this way might be of real value on a sledging journey which had resolved itself into a race against time, and where the ability to carry on for a few days more would bring the party within reach of a depôt of supplies, as occurred in the case of the late Captain Scott and his companions; though we do not know that scurvy was the cause of death on that occasion.

For many years certain factors have been regarded as having a predisposing influence: cold, fatigue, mental depression, fear, short rations, crowded, dirty, and ill-ventilated surroundings, and individual idiosyncrasy.

In passing we must remark that this analysis of the situation does not in any way pretend to be a complete epitome or representation of the present-day knowledge of scurvy; we have attempted merely to pick out those considerations which we regard as being of practical value, to be carefully weighed as having a direct bearing under the heading of this article.

Factors Bearing on Incidence of Scurvy in Polar Expeditions.

Further, fully to understand the problem it is necessary at this stage to explain the circumstances in respect of the incidence of scurvy which may arise during a Polar expedition. Life on the ship, or at a well-stocked base, permits of a full and varied diet, and more or less bulky foods can be carried. Accommodation is, of course, very limited, but quarters can be kept

warm, airy, clean, and bright, and if the personnel has been carefully selected, there is no reason why morale should be low. The conditions on a sledge journey are not so good, and, as far as the danger of scurvy is concerned, vary considerably in the methods adopted. There are explorers who advocate the close copying of methods adopted by the Eskimo, and depending for subsistence largely on such "game" as these barren areas afford. This necessitates a very large consumption of fresh meat, and experience shows a great freedom from scurvy under these conditions. However, there are obvious disadvantages in such a method of travel; the activities of the party are limited to "game" areas, and the daily rate of progress is necessarily very slow. It is quite inapplicable to the dead, gameless Antarctic continent, and under any conditions where the total distance to be covered is great, where the areas to be crossed are totally unknown, possibly devoid of all sources of food, and where rapidity of travel is essential. Under these conditions all food must be carried, it must of necessity be light, and to meet the large expenditure of body energy each ration must have a high calorific value. To obtain the necessary lightness all excess of moisture must be driven off, and the manufacturing processes necessary are such that at present no reliance can be placed on them for the supply of antiscorbutic vitamins.

The modern sledging ration allows of approximately 2½ lb. of food per man per day on full rations, but circumstances may necessitate a reduction of this amount, and cold and fatigue are certain to be more or less constant factors at some stage of the journey. In this type of sledging occasions sometimes arise in which the route leads through a "game" district, and of course full advantage is taken of any opportunity to procure fresh meat. These occasions, however, cannot be relied on, and so the deficiency of vitamin in the sledging ration must be made up by the addition of foods containing sufficient active vitamin to maintain health. In Polar exploration, even when extended sledge journeys are not contemplated, the physical forces of the area are such that unforeseen events may happen, leading to circumstances in which the supply of food may be small and unvaried. Such possibilities, with the danger of the supervention of scurvy, must be considered beforehand, and preparation made for them. They may be classed for practical purposes under the heading of "sledging conditions."

Prevention of Scurvy.

On the above considerations a system for the prevention of scurvy falls naturally under three main headings: (1) the elimination of predisposing factors; (2) the supply of active antiscorbutic vitamins in sufficient quantity; (3) careful treatment of the bowel in the pre-scorbutic stage, and the elimination of extraneous toxins from the gastro-intestinal tract.

It must be directed also to the two sets of conditions outlined above: (1) life on board ship or at a well supplied base; (2) sledging conditions, including abnormal circumstances arising from accident.

The elimination of predisposing conditions is aimed at, in the manner previously indicated, by good management of living conditions in general and maintaining a high morale. The former has been an outstanding feature of all Sir E. Shackleton's expeditions, and with regard to the latter it is interesting to note that in writing of the characteristics necessary to an explorer he has placed the quality of "optimism" high above that of "muscular strength," though sound health and fitness of the personnel are, of course, a sine quâ non. The hours of relaxation are carefully provided for, music is supplied by gramophone, and a large and well-selected library is carried. The most important part of the system depends upon the correct balancing of the dietary and in the selection of foods calculated to contain the active vitamins in sufficient quantity. In carrying this out it is necessary not only carefully to select the foods but to ensure the packing so that at the time of consumption the vitamin shall not have been impaired by age or exposure. The main principles involved in attaining this are: (1) quick packing immediately after preparation, avoiding undue exposure to air; (2) rigid exclusion of the products from air by using hermetically sealed containers; and (3) the storage of cases containing antiscorbutic foods in a cool place, avoiding proximity to engines or boilers.

Reliance has been placed on the following foods:—

On Board Ship.—Lemon juice concentrated by the method advocated by Admiral Bassett-Smith, but not made into tablets, the concentrated juice being treated by the addition of 10 per cent. alcohol to prevent its freezing. Dried milk. Considerable reliance is being placed on the regular daily consumption of dried milk. We have been to great pains to see that the preparation carried has been prepared from healthy cows fed on good pasturage, subjected to as little handling as possible, and prepared by the "roller" process, whereby the milk is subjected on drums to a high temperature for a few moments only. In the packing of it care has been taken to see that at no stage shall it be exposed to undue oxygenation, and similar care will be used when the milk is issued and served. Condensed milk is also being used. Fresh meat will be used whenever obtainable. The meat of the various seals, whale meat, and penguin meat, though having an oily taste, can be made quite palatable by careful cooking. Canned tomatoes will be issued regularly on board ship. As regards germinated pulses and cereals, a quantity of peas, beans, and lentils will be carried, and in the event of signs of incipient scurvy appearing will be used after having been made to germinate. It is necessary to serve them lightly cooked, and as they are very indigestible, they will not be used for prophylaxis or until the necessity arises. Whenever any opportunity occurs of obtaining supplies of fresh vegetables full advantage will be taken of it. In addition a supply of potatoes, carrots, and onions will be carried, and their use prolonged as far as conditions permit.

Sledging Conditions.—Lemon juice tablets, as advocated by Admiral Bassett-Smith, packed in air-tight containers. Dried milk, as above, packed in small air-tight packages, each package containing only one day's ration, thus avoiding undue exposure to air. For the supply of fresh meat a rifle and shot-gun and ammunition form part of the equipment of each self-contained unit in any area where "game" is obtainable.

A representative modern daily sledging ration is composed as follows: pemmican, nut food, biscuit, tea, sugar, dried milk, amounting to a total weight of about 2½ lb. per man per day, and having a food value of about 5000 calories. None of these foods can be relied upon to prevent the onset of scurvy; hence the importance of carrying a reliable antiscorbutic preparation.

The elimination of gastro-intestinal toxæmia is aimed at primarily by supplying a well-balanced ration and sufficient food containing active vitamin, as outlined above. Great care will be taken to maintain in each member an orderly condition of the bowels. Constipation is a factor which frequently arises in Polar expeditions and is due to two main causes: the first is that whereas on the whole every member of the expedition leads a vigorous, active life, occasions occur in which for considerable periods no exercise at all can be taken. Also the process of defæcation has often to be carried out under most unpleasant conditions, when the individual makes the period of exposure as short as possible, tending to incomplete evacuation at each act. A careful preliminary examination will be made, also, of the personnel, especially of the mouth and nasal passages, to avoid any potential sources of toxins, such as dental caries, pyorrhœa alveolaris, chronic rhinitis, or latent chronic disease of the nasal accessory sinuses.

Poisoning from outside the body will be as far as possible eliminated by careful attention to tinned and potted foods, and also by rigidly rejecting the meat of any locally killed animal which shows signs of disease. We found on the last expedition that diseased conditions producing marked pathological changes occurred fairly frequently among seals and penguins.

Conclusion.

In this article attention has been particularly directed towards scurvy and the anti-scurvy or water-soluble C vitamin, but it is realised that there is a

close relationship between this and other deficiency diseases, especially beri-beri. In so far as they can be separated clinically, however, the latter presents for its prevention a much less difficult problem. The anti-beri-beri (anti-neuritic or water-soluble B) vitamin is much more resistant to extraneous factors than the anti-scurvy vitamin, and foods in which it maintains its activity are more easily obtainable. Its elimination is aimed at on the ship by provision of the following foods: rice (containing germ), whole meal flour, dried eggs, dried peas, beans and lentils, fresh meat (including the sweetbreads, liver, and brains of any animals killed), and marmite is added to the sledging ration, which in itself probably contains active anti-beri-beri vitamin. During the course of the expedition fresh penguin eggs will be freely used if obtainable.

It is probable that the next few years will show great advances in the knowledge of deficiency diseases, and in Admiral Bassett-Smith's work in connexion with prophylaxis in the Navy a ready-made system will be available for future exploration.

In conclusion, we wish to thank many prominent workers who have given us their ready assistance in our preparation, Admiral Bassett-Smith, and Dr. Hess, of New York, for personal interviews and much sound advice; Surgeon-Commander E. L. Atkinson, Dr. G. de M. Rudolf, and others. We have made full use of all available literature, and our acknowledgments are due to the various authors.

Bibliography and References.—1. R. McCarrison: Studies in Deficiency Disease, 1921. 2. THE LANCET, 1918, ii., p. 735. Medical Research Committee: Report on Present State of Knowledge concerning Accessory Food Factors (Vitamines), 1919. 3. Bassett-Smith, P. W.: THE LANCET, 1920, i., p. 1102; ii., p. 997; and this issue. 4. Coutts, F. J. H.: Report to Local Government Board on Dried Milks, 1920. 5. Hess, A. F., and Unger, L. J.: Proc. Soc. Exp. Biol. and Med., 1918, xv., 96. See also Hess, A. F.: Jour. Amer. Med. Assoc., March 12th, 1921, vol. lxxvi., pp. 693–700, and Scurvy, Past and Present, 1920.

ANÆSTHESIA WITH NITROUS OXIDE AND OXYGEN UNDER PRESSURE.

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DURING recent years it has come to be recognised that nitrous oxide, mixed with sufficient oxygen to make it respirable over a long period, is the safest and most physiological of all anæsthetics, its use being unaccompanied by unpleasant or dangerous accessory effects either during or after the operation.

When shock is threatened, or when a definite toxæmia is present, chloroform or ether accentuates the danger, whereas nitrous oxide with oxygen seems to be harmless in this direction. The fact that histamine produces fatal shock in an animal which has been long under ether, in doses harmless to a normal animal, or to one anæsthetised with nitrous oxide and oxygen, was recently shown experimentally by one of us (H. H. D.).[1]

On the other hand, the use of nitrous oxide and oxygen has the drawback that, when sufficient oxygen is given to secure perfect oxygenation of the blood, the anæsthesia obtained is not deep. It is notoriously difficult under such conditions to obtain an adequate relaxation of the belly wall for an abdominal operation, unless the muscles are paralysed by nerve-blocking with a local anæsthetic in addition. To secure deep anæsthesia, with full relaxation, by means of N_2O, the proportion of oxygen must usually be so reduced that the patient is slightly blue; the anæsthetic effect is complicated by a partial asphyxia. When pure N_2O is used for short operations, as in dentistry, the asphyxial element becomes very prominent, the anæsthesia produced being largely due to asphyxia, and not differing greatly from that which is produced by inhaling pure nitrogen until unconsciousness occurs.

At present, therefore, anæsthesia with nitrous oxide and oxygen is apt to be a compromise between the disadvantages of imperfect relaxation and those of exposing the patient to defective oxygenation of his blood. These latter are likely to be more serious in the case of a patient for whom nitrous oxide and oxygen on other grounds would be the anæsthetic clearly indicated, by the presence of toxæmia. Dr. Otto Leyton called to the attention of one of us (L. H.) the need of an anæsthetic for use on diabetics, free from these alternative drawbacks, and recalled the demonstration made long ago by Paul Bert, of the possibility of maintaining deep anæsthesia by means of a mixture of nitrous oxide and oxygen in a chamber under a small positive pressure.

Experiments on Dogs.

As long ago as 1878,[2] Bert observed that complete relaxation could be produced in a dog by putting it in a pressure chamber filled with a mixture of N_2O and O_2, 5 parts to 1, under a plus pressure of one-sixth atmosphere. The corneal reflex was abolished, pinching an exposed sensory nerve caused no reaction. A limb could be amputated without any movement on the part of the animal. Recovery from the anæsthesia took place after three or four breaths of pure air. Martin[3] studied continuous anæsthesia produced by this method. He filled a bell-jar with a mixture of N_2O and O_2, 85 parts to 15, and raised the pressure as Bert had done. A flow of the gaseous mixture was adjusted to ventilate the chamber, and, in addition, some milk of lime was put within to absorb CO_2. An animal within this bell-jar was thus kept anæsthetised for 72 hours. On withdrawal it began to move after 15 minutes, tried to stand up after 35 minutes, walked and obeyed commands after 55 minutes, but refused milk. Next morning it appeared normal and ate food eagerly.

Bert[4] states that pressure chambers for performing surgical operations under his method of anæsthesia were being installed at the Hospital St. Louis at Paris, also at Lyons, Geneva, and some towns in Germany.

We could find no published records of the use of these chambers, but merely the statement, in a recent text-book, that they had not succeeded, and that one of them was to be seen still, as a curiosity. Through the courtesy of the present Superintendent of the St. Louis Hospital we received the information that alarm at a mishap occurring when the chamber was first used, which nearly resulted in the death of the patient, had led to the abandonment of the method. Whatever the accident might have been, it seemed clear that it could not be due to anything inherent in the method, and, in view of the practical interest of the matter, we decided to make the experiment on animals, under conditions which, with small modifications, could be applied to a surgical operation on man, if a suitable chamber were available.

Experiments on Cats.

The animals used were cats, and they provided rather a severe test of the method, on account of the difficulty of producing a really deep anæsthesia in the cat, without reducing the oxygen in the mixture to a point near to the limit compatible with life. The mixture of N_2O and O_2 was made in a large Douglas bag and passed through a meter to a mask which snugly fitted the snout. When we used 4 parts N_2O to 1 part O_2, and a current through the mask of 4 litres per minute, the animals continued to wag their tails, to breathe noisily, and to show rigidity of the adominal wall and resistance of the legs to passive flexion. When the ventilation was reduced to 2 litres and then to 1½ litres per minute, the animals were a little more deeply anæsthetised, but still too lightly to stand any operative measure. The pads were moist and pink in colour. When the mask was removed after inhalation had lasted for 30 minutes, the cats were able to walk when put to the ground, but were slightly ataxic for a few seconds. Cats are known to be particularly resistant to N_2O, so we next tried a mixture of 1 part O_2 to 7 of N_2O. With a ventilation of 3½ litres per minute the limbs and

belly were not relaxed; with 2 litres, finally reduced to 1 litre per minute, the belly wall became softer, and the legs showed much less resistance to flexion or extension; tail wagging and vocal breathing ceased. The pads were sweating and slightly blue in colour. When the mask was taken off the animal staggered drunkenly, but quickly recovered. We then tried 8 parts N_2O to 1 part O_2. With a ventilation of 3 to 3½ litres per minute the breathing was slow and deep, the pads bluish and sweating, the abdomen softer, but the recti contracted in response to a touch. With 2 litres per minute asphyxial breathing occurred and the belly was soft. When the mask was removed the animals were unconscious, with blue lips and dilated pupils, but recovered quickly after a few breaths of pure air.

Results in a Pressure Chamber.

Having shown that cats cannot be deeply anæsthetised by N_2O until asphyxiation is partly induced, we next tried the same mixture—viz., 8 parts N_2O to 1 part O_2 in the pressure chamber at the Lister Institute, for the use of which we are indebted to the Director, Prof. C. J. Martin. The method of administration was exactly the same, except that we took the cats and the bag containing the mixture into the chamber, and did not begin the administration until the air pressure had been raised till it stood at plus 7 lbs.—i.e., at about 1½ atmospheres in place of 1 atmosphere. The partial pressure of N_2O was thus raised from eight-ninths to twelve-ninths of 760 mm. Hg, that is, from 675 mm. Hg to 1013 mm. Hg, and that of oxygen from one-ninth to one-and-a-half-ninths of 760 mm. Hg, that is, from 84 mm. Hg to 126 mm. Hg. The partial pressure of oxygen in pure air at sea level is one-fifth of 760 mm. Hg—i.e., 152 mm. Hg. So that the effect of the extra half atmosphere of pressure was to raise the partial pressure of N_2O notably, and, at the same time, to make that of oxygen much nearer to that in the air of the plains, and equal to that in the air of an alpine health-resort. Be it noted that the anæsthetic is given in the pressure chamber in the ordinary way; nothing is changed except the pressure of the atmosphere, which acts, of course, upon the flexible bag containing the mixture. With a ventilation of 2 litres per minute the breathing of the cats was quiet and good, and the anæsthesia was quite as deep as in the last experiment under semi-asphyxial conditions; the belly and limbs became limp, the tail-wagging ceased, and the animal made no response to stimuli, but the pads were of a bright pink colour, with no trace of blueness. We obtained full, deep anæsthesia without any deficiency of oxygenation. When the mask was taken off the animal recovered at once and appeared remarkably alert and normal.

Conclusion.

In an operating room built as a pressure chamber it should be, then, a very simple thing to secure sufficiently deep anæsthesia in man, using N_2O and O_2, 4, 5, or 6 parts to 1, with safety, and with freedom from symptoms of after-poisoning and shock. There is no difficulty in building such an operating chamber. An air-compressor would be required to keep up the pressure at the extra half atmosphere, or less, and to ventilate the chamber, and an air lock fitted with doors would be needed to allow people to pass freely in and out. Mr. R. H. Davis, of Messrs. Siebe, Gorman and Co., tells us that the engineering problem is a very simple one, for the extra pressure required is very slight.

If there is any difficulty it will be from the surgical side, on account of the interposition of the air lock between the operating chamber and the outside. Given an adequate air compressor, passage in and out through the air lock can be reduced to 30 seconds or so. We hope it may be possible soon to bring the method to practical trial.

References.—1. Dale: Brit. Journ. of Exp. Pathol., 1920, i., 103. 2. Bert: Compt. rend. Acad. d. Sci., 1878, lxxxvii, 728. 3. Martin: Compt. rend. Acad. d. Sci., 1888, cvi., 290. 4. Bert: Compt. rend. Acad. d. Sci., 1883, xcvi., 1271.

NAUSEA AND VOMITING IN PREGNANCY.

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A LITTLE over two years ago J. W. Duncan and the writer[1] put forward the theory that the nausea and vomiting of early pregnancy was due to a deficiency of glycogen in the maternal liver. Such a deficiency might be either absolute or relative, i.e., actually lower than normal in amount or lowered relatively to the fat requirement of the maternal and fœtal organisms. In practical support of their ideas they advanced the two following facts which, at the time, they had collected from a series of over seventy cases:—First that, with rare exceptions, the cases showed a ketonuria; even very mild cases in which considerable amounts of food were taken gave urines responding to the nitro-prusside test for aceto-acetic acid*; and secondly, that all improved and most of them very speedily recovered upon a diet or treatment high in carbohydrate, and thus designed to combat the ketosis. It must, however, be distinctly understood that we do not regard the acetone bodies as of themselves the cause of the nausea and vomiting. The acetone bodies are to be regarded as symptomatic of the disturbed state of the maternal liver. Both these facts confirmed us in the idea that the glycogen content of the maternal liver was too low for the requirements of the pregnant organism.

In the present paper it is desired to extend and amplify the contention of the previous report. A further two years' experience with the method of treatment has only offered confirmation of the ideas, and to date, nearly two hundred cases have been treated by carbohydrate feeding with but few failures. The few failures have been either cases due to deliberate and continued breaking of dietetic regulations, or cases brought in in such an advanced condition of pernicious vomiting, that it is doubtful if any treatment would have been of avail. Moreover, Titus, Hofmann, and Givens,[5] have recently published an account of carbohydrate feeding in vomiting of pregnancy which is almost identical with that of Harding and Duncan in its practical details, though they differ in some points of theoretical explanation. Their series of cases numbers over seventy, and that independently they should have arrived at similar conclusions is of itself strong evidence in favour of the theory of glycogen disturbance in the maternal liver. It is not proposed in this present paper to give any extensive review of the literature of the subject; the latter has attracted the attention of obstetricians, pathologists, and chemists to a considerable degree, and has of necessity gathered around itself a multitude of theories, many of which can only be of transitory value. Moreover, from time to time there have appeared excellent reviews in other contributions.[6]

A. The Primary Ætiological Factor.

In the nausea and vomiting of pregnancy there are two periods of occurrence, a major and a minor.

* It cannot be too strongly emphasised and reiterated that the most delicate test for aceto-acetic acid, and consequently for a ketosis, is the sodium nitro-prusside reaction, discovered in its original form by Legal[7] and believed later to be a test for acetone. Harding and Ruttan[8] were the first to point out the mistake and show that the reaction with sodium nitro-prusside and ammonia, especially in presence of strong acetic acid, should be interpreted as aceto-acetic acid, and not as acetone. They found that urines containing no acetone but containing aceto-acetic acid gave a strong positive reaction while urines containing acetone in amounts equivalent to those containing aceto-acetic acid only gave at the most a very weak coloration. They also compared the relative sensitiveness of the Gerhardt or ferric-chloride reaction with the nitro-prusside reaction. In urine the ferric-chloride test for aceto-acetic acid ceased to be positive at a concentration of one part in 7000, while the nitro-prusside reaction continued to give positive tests until the acid had diminished to a concentration of one part in 30,000. These figures refer to the concentration in urine. In water the test is from five to ten times more delicate still. Hurtley[9] has independently arrived at the same conclusion. This point has been emphasised as the significance and priority of our paper appears to have been overlooked.

The major period involves the first third of the gestation period, and the minor is a diurnal periodicity. Sometimes, but very rarely, the nausea and vomiting extend beyond the third or beginning of the fourth month. Many cases which have been most distressing in their symptoms clear up spontaneously at about this time, and many women, knowing this, acquiesce in the discomfort and distress of their condition instead of seeking relief at experienced hands. In this they have been encouraged, either openly or tacitly, by the inability of the medical profession to aid them in their difficulty, and such an attitude has confirmed their belief that a certain degree of nausea or even vomiting is an inevitable accompaniment of child-bearing.

Minor or Diurnal Periodicity.

The minor periodicity of nausea and vomiting in pregnancy is shown clearly by the use of the designation "morning sickness," though all cases do not exhibit this periodicity in the morning. Nevertheless such a periodicity is very common, and a diurnal wave of nausea is often observed even if the crest is not matutinal. Such intermittent cases pass insensibly into a continuous condition of nausea or vomiting. The rejection of food, both involuntary and voluntary, with the supervening starvation, intensifies and complicates the picture until we come to know it as pernicious vomiting. It is evident from the latter statement that the so-called pernicious vomiting is regarded as a development of the milder form, differing only in degree, and in multiplicity of effects. Indeed, the work on this subject was commenced with the idea of separating the factors involved in pernicious vomiting through a study of its presumably simpler forms.

Findings Relating to High Carbohydrate Diet.

The following facts had had a determining effect on the choice to attack the problem experimentally through an investigation into the effect of high carbohydrate diet on the simpler cases of vomiting in pregnancy.

(*a*) Autopsy findings, in a large number of cases in the literature, of acute yellow atrophy of the liver.[7] The necrosis of the central portions of the lobules and the fatty degeneration of the peripheral portions occur, even in so-called acute cases where marked emaciation of the patient is not shown.

(*b*) The findings of Mottram[8 9] that a short period of hunger was sufficient in some animals to produce a fatty infiltration of the liver, and that a similar condition was sometimes found in ill-nourished and nervous pregnant animals. These fatty infiltrations are purely physiological in character and readily pass away under more normal conditions.

(*c*) The knowledge that of all metabolic disturbances the carbohydrate metabolism is the one most readily affected.

It is easy to see that, given the above-mentioned facts, a connexion could readily be traced between a disturbance of carbohydrate metabolism, resulting from a disturbance of the glycogen of the maternal liver, upon which a fatty infiltration would ensue, and the autopsy findings, in the advanced cases of vomiting, of extensive hepatic degeneration. If there existed any parallel between the animal experimentation of Mottram and the human cases, then pregnancy, together with a short period of hunger, was sufficient to account for the minor periodicity of the nausea and vomiting of pregnancy.

Starvation and Nausea.

In this connexion Dorman[10] makes the statement:

"Small amounts of easily digested food are to be taken every two or three hours, with regular meals omitted. Many patients discover this fact for themselves. *The extremes of nausea come on after a prolonged fast.*† Sometimes the evening meal, which is a late dinner, following a light luncheon, is the time of greatest distress. The meal is approached with a great distaste for food and is either refused or rejected after eating. The underfeeding then exaggerates the nausea. A tolerance for dinner may be acquired by taking afternoon tea."

† The italics are mine.—V. J. H.

Titus, Hofmann, and Givens,[6] commenting on morning sickness, remark:

"The first nausea of pregnancy usually affects the patient early each day soon after she arises. *This is after the longest period of fasting in the 24 hours.*† An overnight fast can produce only moderate hunger, but any hunger may be considered mild starvation. If eating before making any exertion relieves this morning nausea it is obvious that there is a relation between starvation and the occurrence of the nausea."

One of the first characteristics of starvation is a lowering of the glycogen content of the liver. With prolonged starvation it may disappear entirely. Fatty infiltration of the liver is an inevitable sequel to glycogen diminution, and the logical procedure to avoid such a condition is to maintain the glycogen content at as high a level as possible. In this way the treatment of nausea and vomiting in pregnancy by the use of a high carbohydrate diet was devised, with the results which were mentioned at the beginning of the paper. Moreover, the possibility of failure of normal protein metabolism, which had been advanced by Stone[11] and by Ewing and Wolf[12] had been entirely discredited by the damaging criticism of Underhill and Rand[13] and the precise experimental findings of Losée and van Slyke.[14]

In connexion with the influence of starvation Titus, Hofmann, and Givens have unjustly criticised the theory of our previous paper, although as has just been quoted, they themselves point it out as a factor in the condition. In fact, if the two papers are compared side by side they present a wonderful similarity. A short period of starvation lowers the glycogen content of the liver. This short period during the night hours is ordinarily insufficient to produce any symptoms, but in pregnancy there is added an extra strain upon the glycogen supply due to the pregnant condition itself. It is thus the double load upon the maternal liver which is sufficient to produce a temporary fatty infiltration of the organ, which clears up during the day hours under the influence of the carbohydrate of the food. The evidence of the fatty infiltration, or even perhaps of a slight degree of fatty degeneration, is shown by the occurrence of acetonuria even in very mild cases of nausea and vomiting. Small areas of fatty degenerated liver are known to become normal under carbohydrate feeding,[15] though the beautiful work of Whipple and his associates[16] only appeared after the publication of our first paper. The clinical use of glucose in cases of delayed chloroform poisoning is also well known.[17] On the other hand, one portion of the theory advanced by us is certainly open to criticism. At the time we had before us a personal communication from Imrie to Mottram[18] stating that the fœtus was greedy of unsaturated fat. Since then Imrie[19] has published his results in full, and it is evident that the statement referred to fat in the fœtal liver at term. Such results, of course, could have no bearing on the present discussion, and any arguments previously based on them must be withdrawn.

Major Periodicity.

The minor periodicity of nausea and vomiting thus receives adequate explanation on a theory of glycogenic disturbance, or carbohydrate deficiency, in the maternal liver. The major periodicity also is capable of interpretation by this hypothesis. The first third of pregnancy is characterised by the parasitic behaviour of the fertilised ovum, and the defensive measure adopted by the mother in the formation of a placenta, with the subsequent change of the parasitic life to a symbiotic one. Accompanying this is a period of nitrogen loss, in many experimental animals,[20] and although a similar negative balance has not been observed in women it is extremely likely that such is the case.[21] Both Bar[20] and Murlin[20] have pointed out the coincidence of this negative balance of nitrogen and what they term "physiological vomiting of pregnancy." Both terminate of themselves at about the same time. Placenta formation is also complete at about the same period, and it is here, it is

thought, that the drain upon the glycogen of the maternal liver is brought about by pregnancy. One of the functions of the placenta in its early stages is to store glycogen for the growing fœtus.[22] In this way it functions for the fœtal liver until that organ is able to store its own reserve carbohydrate, and during this period of storage it is the glycogen of the maternal liver upon which it draws for its supply. With the placental formation complete, a condition of equilibrium establishes itself between the placenta and maternal liver, and the excessive drain being lessened the glycogen then comes to its normal amount, all fatty infiltration or degeneration disappears, and with it there is a cessation of vomiting or nausea. The carbohydrate theory is thus capable of explaining the major periodicity as well as the minor periodicity of nausea and vomiting in pregnancy.

Insufficiency of Hepatic Glycogen persisting throughout Pregnancy.

There are also a few cases in which the nausea and vomiting continue after the fourth month, and may be present throughout the entire period of gestation. It is assumed in such cases that an equilibrium between the placental and hepatic glycogen is never reached, and the depletion of the maternal stores continues. This is possible because Slemons[23] has emphasised the demand of the fœtus for carbohydrate throughout its intra-uterine life. The fat of the fœtus comes probably from carbohydrate, and not from maternal fat. Hence if the equilibrium just referred to is not established, and the placental stores of glycogen are not sufficient to act as a buffer between fœtal demands and maternal supplies, the condition of insufficiency of hepatic glycogen will persist throughout the entire pregnancy.

It is evident that if the dual periodicity of the nausea and vomiting in pregnancy is accepted as the criterion whereby theories of its ætiology are judged, that the carbohydrate deficiency theory is the only one which satisfies both conditions. Auto-intoxication, disturbances of internal secretions, neurosis, may explain part of the phenomena, but can only be secondary in origin, though they may become so large that clinically in some cases they assume a primary importance. Moreover, some of these act either directly or indirectly upon carbohydrate metabolism, and may thus reinforce the original fault. It is also apparent that under the title of nausea and vomiting in pregnancy we have not included those cases which Williams [24] classifies as reflex, conditions in which malpositions of the uterus, ovarian tumours, &c., are to be set down as the inciting cause of the disturbance. Such cases, it is believed, are rare, and surgical treatment is the only procedure.

B. *Secondary Ætiological Factors.*

Intestinal Intoxication.—No one can doubt the importance of regular bowel movement in ordinary health, and it is equally important in the pregnant condition. Dirmoser [25] was responsible for the emphasis which has rightly been placed upon this factor, and several cases have come under observation where a certain degree of nausea in a pregnant state has indubitably been due to this cause. To ascribe to intestinal intoxication a primary ætiological importance is, however, to place it in a wrong position. Such cases as we have seen would have shown a degree of nausea even if pregnancy had not been present. They were cases in which the patient had suffered from a glycogenic disturbance of the liver with its accompanying nausea and vomiting, and had reacted favourably to carbohydrate treatment. Enemata had ceased, and the patient was on a liberal diet, when a slight degree of nausea returned. Fearing a relapse to her original distressing condition, the symptom of the nausea is exaggerated, with a depressing mental effect. The most careful examination of the urine fails to reveal any acetone bodies, and a purgative is followed with good results and a disappearance of the nausea. Whether or no the liver of the pregnant animal possesses a lowered detoxicating power by reason of lowered glycogen content it is, in our opinion, not possible to state at present. Certainly the protective action of a previous high carbohydrate diet makes the liver less susceptible to delayed chloroform poisoning.[16] Moreover, it is interesting to point out that after the carbohydrate treatment advocated in this and the previous paper, with its high amount of vegetables and with lactose by mouth, has been continued for a little time, certainly all danger of intestinal intoxication inciting another attack of nausea is reduced to a minimum, as the change in the direction of a putrefactive to an acidophile bacterial flora is well known on such a diet.[26]

Neurosis.—This factor is undoubtedly an important one; so important clinically that it has been given a premier place by many observers in this field. Nevertheless, for the reasons which we have previously stated it has been here placed as a secondary ætiological factor. A normal pregnancy is marked by heightened nervous reflexes,[27] and an unduly sensitive sympathetic nervous system can only have one effect upon the store of hepatic glycogen. It will result in its diminution. The effect of excitation of the sympathetic nervous system upon glycogen is well known to produce an excess of sugar in the blood at the expense of the glycogen in the liver, and it is thus seen how this neurotic factor will aid and reinforce the original primary factor. Thus the importance of rest and isolation cannot be too strongly emphasised. The many and varied reports of cures by suggestion, or by some trivial procedure, thus fall into their place. The excitation of the sympathetic nervous system is brought under control, and with it a diminution of the drain upon the glycogen, and a consequent return to more normal conditions. Quantitatively, the factors of pregnancy and neurosis may vary to such an extent that the second may become the greater of the two, and thus present itself as the major factor from the therapeutic standpoint; nevertheless, the metabolic factor must not be overlooked, otherwise the condition may simply recur, as is instanced in Williams's classic paper [24] (Cases 5 and 7).

Pernicious Vomiting.

In the foregoing paragraphs, then, it has been proposed that the primary ætiological factor in the nausea and vomiting of pregnancy is a lack of glycogen in the liver of the mother, with intestinal intoxication, and neurosis, as secondary factors, the metabolic and neurotic factors reinforcing one another; fatty infiltration of the liver ensues, and consequent upon the subsequent nausea there arises a positive distaste and intolerance for food, resulting in starvation. The outcome is the so-called pernicious vomiting. The influence of the resulting starvation has been very clearly emphasised by Underhill and Rand,[13] who ascribe to it the whole changes in the urinary pictures of pernicious vomiting. Their views have met with criticism, but it has only been that of degree. Ewing,[28] while admitting that starvation has an influence on the picture, claims that it is not an entirely adequate explanation. Gilliatt and Kennaway[29] point out that ammonia coefficients in pernicious vomiting rise more rapidly, and to greater heights, than in simple starvation. Neither criticism, in our mind, destroys the value of the arguments of Underhill and Rand; they merely emphasise that to starvation there should be added a further factor or factors. The lack of carbohydrate in inanition which is responsible for the urinary changes which have been found, is intensified in pregnancy by the factors which we have just previously been discussing, and we believe that it is the speed with which the changes occur that constitute the peculiarly vicious and dangerous condition which one meets with in pernicious vomiting. Without this added strain of pregnant growth, starvation changes would tend to come to equilibrium, until the approach of death itself.

We have thus put forward in a general way a hypothesis to explain the nausea and vomiting of pregnancy. In our opinion, it makes the fewest assumptions ant is consistent with the greatest number of facts. Id does not assume any specialised toxæmia of pregnancy

and the practical applications certainly merit consideration and trial. It may, however, rightly be asked if there is no other condition in which an analogous state of affairs exists? A very analogous condition sometimes arises in starvation treatment of diabetes, expecially if carried out according to the original directions of Allen,[30] where there is a complete and rapid withdrawal of food.

"What is seen clinically is first a vague malaise, often with headache or pains elsewhere, dizziness and increasing prostration. Nausea seems to be invariable and the gravest stage is reached when vomiting is established. Though the condition is acidosis, the appearance is not that of typical coma. Dyspnœa may not be prominent, and the consciousness may be clear up to the last hours or minutes of life. The end comes with uncontrollable vomiting and profound and rapidly progressive weakness."

The avoidance of such a condition as that described is brought about by the adoption of Joslin's modification of the fasting treatment, where the starvation is brought about gradually, and it is this well-known clinical result that induces the belief that the speed of the depletion of the glycogen stores plays a big part in the resulting symptoms in the nausea and vomiting of pregnancy.

Practical Considerations.

From the foregoing certain practical considerations are evident. Each factor must be brought under control by proper treatment.

A. *The Metabolic Factor.*—The glycogen supply of the maternal liver must be kept as high as possible by use of a diet rich in carbohydrate. This does not mean that the necessary protein supply must be entirely withheld, except temporarily. Fats, however, may be excluded for quite long periods of time without any ensuing harm. A high carbohydrate diet is best accomplished in a series of small meals, five or even six in number being taken throughout the day. Cereals in various forms (bread, toast, crackers, rusks, the different varieties of breakfast foods), vegetables of all kinds, both cooked and fresh, and especially in the form of salads (without dressing), fruits both fresh and stewed; with a little milk (not cream), form a very satisfactory and appetising diet, which is rich in carbohydrate. Such a diet taken in a number of small meals for three or four days is very satisfactory with patients complaining of morning sickness or mild nausea. Their acetonuria soon vanishes under the dietetic treatment and the symptoms are replaced by a feeling of extreme well-being. Such a diet, however, must not be continued too long. There must be added to it a little more protein. Milk, eggs, fish, chicken, meat (except pork) are added. Among the fish we usually exclude salmon, mackerel, and whitefish, on account of their fat content. Butter, too, is usually kept at a minimum. There need be no fear on such a diet that fœtal growth will be retarded by lack of accessory factors. With fresh green vegetables and fresh fruits in the daily menu an ample supply of all of them is assured. In addition, and especially if it is thought that the dietetic restrictions will not be kept as rigorously as they should, one to two teaspoonfuls of milk-sugar dissolved in a cup of tea, or coffee, or glass of water, or lemonade may be ordered three times a day. The milk-sugar is practically tasteless. In the more severe cases where rest in bed and isolation are demanded, no attempt is made to feed the patient by mouth if there is any disinclination to take food. Usually in these cases the patient has no desire to eat, the tongue is coated, and the breath foul, the vomiting is severe, and is often bile-stained, sometimes occasionally flecked with blood. On the other hand, the vomitus may be perfectly clear, except for a little mucus. Epigastric pain is frequent in these cases. The urine may show a little bile: it contains large amounts of acetone bodies responding readily to the Rothera or the Gerhardt test: a trace of albumin is often found but rarely any casts: the volume in 24 hours is low and the specific gravity high. Some degree of dehydration is almost invariable in these severer cases, a parched tongue and mouth, dry lips and skin, and often an intense thirst mark a degree of anhydræmia. Advantage is taken of any symptom of thirst to urge fluids by mouth. Water, lemonade, orangeade, ginger ale, weak tea, any liquid of such a nature that the patient fancies is not only allowed ad libitum, but urged, and two teaspoonfuls of lactose are dissolved in each glass or cup of liquid. From 50-70 ounces of fluid a day can thus be given by mouth. At the same time 6 to 8 ounces (depending upon the amount the patient can bear with a reasonable degree of comfort) of 10 per cent. glucose are given by bowel as nutrient enemata three times a day. A cleansing enema is first given in the morning. In a few cases we have given the glucose enemata by Murphy drip, and used a 20 per cent. solution of the sugar, giving two hours on and one hour off. Some patients seem to prefer this method of administration, as the amount of fluid introduced into the bowel at one time is very small. When given 6 to 8 ounces at once, even with a urethral cathether and very slowly, a certain amount of distension is unavoidable and with it usually some degree of nausea. Usually, however, the Murphy drip method of administration produces abdominal cramps, which are very painful. We have also used 10 per cent. glucose given interstitially, generally 500 c.cm. Such administrations are, however, very painful for at least 24 hours afterwards, and the fear of a second injection has sometimes a harmful effect. This harmful effect may be mitigated by using 30 gr. bromide t.i.d. in each enema for the previous and subsequent 24 hours. Half a grain of codein may also be used the night of the injection with advantage.

Where, however, the symptom of thirst cannot be taken advantage of, and no amount of urging will cause the patient to drink, in addition to the enemata just mentioned one litre of sterile 5 per cent. glucose in normal saline is given intravenously. Like all other intravenous injections it is given very slowly so as not to embarrass the action of the heart. Two or three such injections are usually sufficient, and they are never continued when the avenue of supplying water by mouth becomes available. In spite of all this some cases continue to vomit, and the more water you get into them the greater is the volume of vomitus, while the urine still remains low in volume and of high concentration. It would seem as though the vomitus had taken the place of the urine as the excretory path for water. A chemical examination of such a vomitus shows it to be mainly water, with traces of urea and salts. It contains no acetone bodies, although the blood and the urine may contain them in high concentration. If, as Gilliatt and Kennaway[29] suggest, the vomiting is "evolved as a protective mechanism, serving to rid the body of harmful substances," certainly the harmful substances must be bile or unknown substances existing in minimal amounts. It should certainly be present in cases such as we have described, where the volume of vomitus may be two or three times that of the urine, even when no water is taken by mouth. Such cases are very difficult to treat, and are best attempted by adding 25-40 gr. of bromide to each enema for two or three days. At the same time water is supplied intravenously, and a cautious use may be made of digitalis and caffeine.

Two or three days of such metabolic treatment as has been described are usually sufficient to produce an amelioration, even in very severe cases, and most of them express a desire for something to eat. A little dry toast, or a few cream crackers, with a little preserve or marmalade are given. Mashed potato and fresh fruits come early on the list of allowed foods. Then porridge or any of the breakfast cereals are admitted, and finally a free choice of vegetables. The glucose enemata are continued until the urine becomes acetone free. Then protein is allowed, chiefly chicken and fish, for three or four days. Milk soups and purée soups are also very useful here. If, however, the clinical condition is very greatly

improved, and the acetone bodies continue to be found in small amounts in the urine, the introduction of protein into the diet need not be delayed until their actual disappearance. Usually, however, there is a close correspondence between the acetonuria and the clinical condition. Cream, butter, eggs, fat bacon, and fried dishes are best deferred until the patient has been for some time on the carbohydrate-protein diet, and even then should be introduced cautiously, and used sparingly.

B. *Intestinal Intoxication Factor.*—The bowels, if at all constipated—as they usually are—are opened by an enema or laxative. As far as laxatives and purgatives are concerned we have only one observation to offer. Avoid phenolphthalein and calomel. Almost all cases of severe vomiting show a slight degree of albuminuria, and although it is of so slight a degree that it is usually neglected and disappears without any treatment, nevertheless we do not think it worth while to risk aggravating it by the use of phenolphthalein or calomel. Once the high carbohydrate diet is established, the amount of vegetables and fruits is usually sufficient to keep the bowels in open condition. The milk-sugar is also useful in suppressing the putrefactive bacteria.

In addition considerable quantities of fluid are always urged by mouth. Any toxic substances absorbed from the bowel, or any produced by the maternal liver in its process of fatty degeneration, are thus kept at a minimum concentration in the blood and tissues. This applies especially to severe cases.

C. *The Neurotic Factor.*—Rest in bed with complete isolation is advocated at once for all cases in which the neurotic factor is recognised. Such a case is best treated at a hospital, as the requisite degree of isolation cannot be attained at home, even with a trained nurse in charge. Heavy doses of sedatives are usually rigorously avoided. On admittance to the hospital half to one grain of codein may be used for the first night to counteract the exciting effect of the removal and the new surroundings. After that, however, the only sedative allowed as a matter of routine is a mild dose of bromide (20 to 30 gr.) given by bowel in the evening. Very strict attention is paid to the other two factors. Visitors are rigorously excluded. In a few rare cases, where the patient is of a very excitable temperament, the bromide may be continued in each enema for a few days.

Summary.

It has been proposed that the primary ætiological factor in the nausea and vomiting of pregnancy is lack of glycogen in the maternal liver.

That secondary factors are intestinal intoxication and neurosis.

That as the condition progresses starvation and possibly dehydration intensify the symptoms to a degree known as pernicious vomiting.

That the correct therapy consists in the recognition of the value of the factors and bringing them under proper control by the following means:—

(*a*) The use of glucose to restore and maintain the glycogen content of the maternal liver; (*b*) the keeping open of the bowel; (*c*) rest and isolation, with a cautious use of sedatives to control the neurosis; (*d*) the use of water to combat any dehydration.

References.—1. Duncan, J. W., and Harding, V. J.: Jour. Can. Med. Assn., 1918, vii., 1057. 2. Legal, P.: Zeit. f. anal. Chem., 1883, xxii., 464. 3. Harding, V. J., and Ruttan, R. F.: Bioch. Jour., 1912, vi., 445. 4. Hurtley, W. H.: THE LANCET, 1913, i., 1160. 5. Titus, P., Hoffmann, G. L., and Givens, M. H.: Jour. Amer. Med. Assn., 1920, lxxiv., 777. 6. Williams, J. W.: Johns Hopkins Hospital Bulletin, 1906, xvii., 71; Ewing, J.: Amer. Jour. Med. Sci., 1910, cxxxix., 828; see also 1. 7. Davis: Amer. Jour. Med. Sci., 1894, cvii, 147; Stone, W. S.: Amer. Gyn., 1903, iii., 518, New York Med. Jour., 1905, lxviii., 295; Allbutt, C.: THE LANCET, 1897, i., 579. 8. Mottram, V. H.: Jour. Physiol., 1909, xxxviii., 281. 9. Coope, R., and Mottram, V. H.: Jour. Physiol., 1914, xlix., 23. 10. Dorman, F. A.: Amer. Jour. Obst., 1918, lxxvii., 607. 11. Stone, W. S.: Med. Record, New York, 1905, lxviii., 295. 12. Ewing, J., and Wolf, C. G. L.: Amer. Jour. Obst., 1907, lv., 289. 13. Underhill, F. P., and Rand, R. F.: Arch. Int. Med., 1910, v., 61. 14. Losée, J. R., and van Slyke, D. D.: Amer. Jour. Med. Sci., 1917, cliii., 94. 15. Rosenfeld, G.:

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ABSCESS OF THE BREAST OCCURRING IN A TYPHOID CARRIER.

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ALTHOUGH abscesses due to *B. typhosus* have been reported as occurring in a number of different sites, I have not in the literature come across an example of location in the breast. It has accordingly been considered worth while to report the following case.

The patient, a married woman aged 30, reported in the out-patient department of St. Thomas's Hospital on March 15th last, complaining of a lump in the right breast, which she had first noticed about three months before. It had shown no signs of activity until about three weeks earlier, when it started to enlarge and became somewhat painful. The lump was diagnosed as a carcinoma, and the patient was directed to come to the hospital a week later for admission, with a view to its removal.

Patient was admitted to the surgical unit wards under Sir Cuthbert Wallace on 22/3/21. By this time there was a well-defined tumour, occupying almost the whole of the right breast, but inclining a little to the inner and upper part. It was adherent to the skin, which was inflamed, just above the nipple, and fluctuation could be elicited in this spot. There was no discharge from the nipple; it was in no way adherent to the deeper structures and no enlarged glands could be made out in the axilla. Patient's temperature was 100° F. Diagnosis was altered to one of mammary abscess. On the following day the tumour was incised and drained by Mr. W. W. Wagstaffe.

On examination in the clinical units' pathological laboratory the pus was found to be of a viscous nature; the cells were so degenerate that the order to which they belonged could not be determined; no organisms were seen in stained films. On culture the pus gave a pure growth of a Gram-negative bacillus. In the ordinary routine cultures of this organism were made in MacConkey broth and in gelatin by stab. No liquefaction of the gelatin occurred and there was no change in the MacConkey. The organism was now put up in mannite and broth; it was found to be motile and to produce acid only in mannite. It was accordingly put up against the Lister Institute typhosus agglutinating serum (titre of 2000) and agglutination was obtained to the full titre.

By the time that this result had been obtained the patient had left hospital with the operation wound almost entirely healed. On April 4th she was seen in the out-patients department and questioned as to past history of typhoid infection. The patient stated that up to October, 1920, she had been for four years resident in India, but had no knowledge that she had ever had typhoid. In July, 1920, while resident at Quetta, her two children had been ill with what was diagnosed as measles; she had nursed them and became affected with what was thought by her doctor to be the same disease. From that time until she left India in October, 1920, her health was good, but while coming over

(*Continued from previous column.*)

Ergeb. de Physiol., 1902, i. (1), 651. 16. Davis, N. C., and Whipple, G. H.: Arch. Int. Med., 1919, xxiii., 612, 636, 711; Davis, N. C., Hall, C. C., and Whipple, G. H.: Ibid., 689. 17. Beddard, A. P.: THE LANCET, 1908, i., 782; Weir, A. A.: THE LANCET, 1909, ii., 710. 18. Mottram, V. H.: Can. Med. Assn. Jour., 1915, v., 603. 19. Imrie, C. G., and Graham, S. G.: Jour. Biol. Chem., 1920, xliv., 243. 20. Jägeroos, B. H.: Arch. f. Gynäk., 1902, lxvii., 517; Bar and Dounay: Jour. de Physiol. et de Path. Gen., 1905, vii., 832; Murlin, J. R.: Amer. Jour. Physiol., 1910, xxvii., 177; Gammeltoft, S. A.: Skan. Arch., 1913, xxviii., 325. 21. Landsburg, E.: Zeit. f. Geburts. u. Gynäk., 1914-15, lxxvi., 53; Wilson, K. M.: Bull. Johns Hopkins Hosp., 1916, xxvii., 121. 22. Lockhead, J., and Cramer, W.: Proc. Roy. Soc., Series B, 1908, lxxx, 263. 23. Slemons, J. M.: Amer. Jour. Obst., 1919, lxxx., 194. 24. Williams, J. W.: Bull. Johns Hopkins Hosp., 1906, xvii., 71. 25. Dirmoser: Wein. Klin. Woch., 1903, xvi., 405. 26. Hull, T. G., and Rettger, L.: Jour. Bact., 1917, ii., 47. 27. Blumreich and Zunz: Arch. f. Gyn., 1902, lxv., 737. 28. Ewing, J.: Amer. Jour. Med. Sci., 1910, cxxxix., 834. 29. Gilliatt, W., and Kennaway, E. L.: Quar. Jour. Med., 1918-19, xii., 61. 30. Allen, F. M., Stillman, E., and Fitz, R.: Monographs of Rockefeller Institute of Medical Research, 1919, No. 11, 100.

on the boat she was very ill with an undiagnosed complaint, from the effects of which she was only recovering when she first attended the hospital.

From the history it was concluded that the illness from which the patient suffered on the boat must have been the original typhoid infection, and it was confidently expected that plentiful agglutinins would still be remaining in the blood. Serum was accordingly obtained and tested in dilutions of from 1/250–1/2500 against the Lister Institute agglutinable typhoid emulsion. To my great surprise no agglutination was obtained. At the same time a catheter specimen of urine was obtained and cultures were taken from the operation wound, which was now almost healed; no growth of *B. typhosus* was obtained from either source.

The absence of agglutinins from the patient's serum seemed so inexplicable under the circumstances that a further agglutination test was performed with the original organism, with the same result as before. Furthermore, one agar slope culture of the organism was used to absorb 2 c.cm. of a 1/10 dilution of the Lister Institute agglutinating serum (already diluted 1/10). The absorbed serum was then put up in dilutions of whole serum of from 1/250–1/5000, against a known agglutinable typhoid strain, when it was found that the agglutinins had been completely removed within these limits. All doubt as to the identity of the organism with *B. typhosus* was finally removed by this result, which was confirmed by Dr. H. Schütze of the Lister Institute, who very kindly typed the organism independently.

On the strength of these findings the M.O.H. of the district in which the patient lived was notified, and shortly afterwards a report was received from him that examination of the patient's fæces had resulted in the isolation of an organism shown by agglutination tests to be *B. typhosus*. Various attempts were made to get the patient to report again to the hospital, with a view to ascertaining if her serum would agglutinate her own organism, but unfortunately she had moved from London and her experiences since her identification as a typhoid carrier had not encouraged her to go out of her way to deal with medical men.

The points in this case to which attention is particularly drawn are: (1) the occurrence of a typhoid abscess in the breast, having, so far as could be made out, no association with underlying bone; (2) the fact that the patient, although a carrier, was unaware that she had ever had typhoid fever; and (3) the absence of typhoid agglutinins in the patient's own serum.

SCHISTOSOMA MANSONI IN SOUTH AFRICA.

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IN view of the return to Natal in 1918 of a large number of our troops from the campaign in Egypt, I drew the attention of the Defence Department to the large number of fresh-water snails in the Durban suburbs which might act as intermediary hosts for the Egyptian form of *Schistosoma mansoni*, which up to that time was unknown in South Africa except on the Rand, amongst native labourers who had been imported from the tropics.

In August, 1919, I motored Dr. Annie Porter of the South African Institute for Medical Research to several pools at Mayville and Sydenham, and we collected about 350 snails from one pool where *Physopsis africana* was heavily infested with schistosomes and *Limnæa natalensis* with the larvæ of fasciola. In the *Medical Journal for South Africa*, January, 1920, Dr. Annie Porter stated that she had found both *Schistosoma hæmatobium* and *Schistosoma mansoni* in these two common species of fresh-water snail, and in *Parasitology*, September, 1920, Dr. E. C. Faust reported both parasites in the material I sent him from *Physopsis africana*.

On June 14th, 1921, a boy was brought to me for treatment who had suffered from constant hæmaturia of 18 months' duration, but no other symptoms, since bathing in these pools at Sydenham. Microscopic examination of the centrifugalised deposit of urine passed revealed the presence of both lateral and terminal-spined ova, the latter being much more numerous. Both forms were about the same size, being from 0·12 to 0·15 by 0·06 mm. in diameter; the lateral spine was about twice the size of the terminal one.

In view of the more serious nature of infection with *S. mansoni* every endeavour should be made to eradicate the snails from these heavily-infested pools. Since the introduction of white duck[1] on the pool where Dr. Porter and myself collected so many in August, 1919, this water has remained free from them.

Durban.

A CASE OF HUMAN ANTHRAX IN BUGANDA KINGDOM.

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THE following case is reported as being the first instance in Buganda proper of an infection of man by *B. anthracis*. Human infections have been reported by Spearman in 1917 from Jinja, in the Eastern Province, and by Taylor from Ankole, the great cattle country in the Western Province of Uganda Protectorate. Spearman's case was not subjected to a full bacteriological examination, but Taylor isolated an organism in pure culture which corresponded, in so far as it was tested, to *B. anthracis*. The disease in animals has been known for some time to the Veterinary Department, in East Africa at any rate, and Taylor, as the result of a careful inquiry in Ankole, found that anthrax was well known to the Banyankole herdsmen. The history of the present case is briefly as follows:—

On Feb. 15th, 1921, a Muganda bricklayer, engaged on the construction of the venereal hospital at Mulago, was sent to hospital with a rough diagnosis of abscess of the jaw. Suspicion was aroused by the trifling character of the pain in comparison with the intensity of the swelling and œdema. On the edge of the right jaw there was a slightly raised tuberculated oval ring, some 1½ by ¾ inches in extent; there were no vesicles. The centre was slightly depressed and considerably darker than the skin in general. A dense infiltrated area surrounded the ring and extended for about an inch all round, fading into the œdema. The latter was so intense as to be almost fluctuating; it extended from the zygoma to the clavicle, and caused a certain amount of obstruction to respiration. There was surprisingly little pain. The temperature on admission was 100° F. The patient, whose work had nothing to do with hides or cattle, stated that he had bought and cut up some of the flesh of a bullock which was alleged to have been gored by another—probably a Luganda term for "death from unknown causes." Three days later he noticed a small papule on his cheek which he scratched, and it had gone on increasing in size from that time up to his admission to hospital some six days later.

On admission the pustule was at once excised and the wound painted with pure carbolic, partly closed by stitches, and a wet carbolic dressing applied. The temperature at once fell, and remained practically normal until his discharge three weeks later; the œdema subsided and had almost disappeared at the end of a week. A smear examined immediately after the excision showed typical anthrax bacilli in pure culture. They occurred singly or in short chains of two or three.

Bacteriological Report.

Tissue received 16/2/20 in saline; section prepared, revealing large bacilli scattered through tissues bordering on wound; bacilli Gram-positive. The blood-stained saline showed numerous similar bacilli in very long chains, the ends being cut off square. A portion of the material was repeatedly washed in sterile saline and rubbed on agar slopes, which were incubated at 37° C., aerobically and anaerobically. Vigorous growth resulted, under both conditions, of mixed culture of Gram-positive cocci and the large bacillus. The bacillus was easily isolated in pure culture. The organism answered to the classical description of the anthrax bacillus. The square-cut ends were most obvious in preparations lightly fixed with heat. In 36–48 hour cultures spore-formation was observed; spores central. Bacillus immobile; tended to form very long chains in liquid culture media; liquefied gelatin in funnel-shaped manner, the 25 per cent. gelatin used in this climate hiding the finer characters of the growth. Grew well on agar, aerobically

[1] See reference in THE LANCET, 1919, ii., p. 636.

and anaerobically at 37° C. Growth creamy at first, becoming greyish and dryer later on; faint mousy smell. Milk curdled and digested. The edges of the growth on agar showed little tongue-like projections, which, in common with the isolated colonies on agar, showed the beautiful wavy appearance caused by strands of parallel chains of bacilli which is described and figured in the text-books. Isolated colonies on agar plates presented a very characteristic appearance suggestive of tiny three- or four-fingered star-fish, or catherine wheels. In texture they looked like little bedraggled tufts of wool. In peptone water the woolly appearance was very noticeable in the masses of growth which, on gentle shaking, detached themselves from the surface clumping.

The serum of the patient taken on March 8th agglutinated up to 1/80, with traces at 1/160. The bacillus refused to emulsify very evenly either in normal saline, 0·1 per cent. saline, or distilled water, but controls were set up with normal saline and with normal human serum, and the results were definitely positive. The tests were performed with 0·3 c.cm. unit volumes, and incubated for two hours at 37° C., two hours at 56° C., and confirmatory readings taken overnight.

Animal Inoculation.

A rabbit and three healthy wild rats were inoculated. The rabbit received two drops of a saline emulsion of the bacillus subcutaneously on 16/3/21. The animal died on the 18th; post mortem the spleen was small; mesenteric vessels much injected; peritoneal cavity contained blood-stained fluid. The heart-blood gave a pure culture of a Gram-positive bacillus corresponding in every way with the organism inoculated. The rats were all inoculated in the same manner on 12/3/20. Rat 292 was found dead on the morning of 13/3; the other two were alive on this date, but were found dead on 14/3/20.

Post-mortems.—Rat 292: spleen slightly enlarged, injected mesenteric vessels; small amount of exudate in peritoneal cavity; heart-blood gave the bacillus in pure culture; spleen smear showed the bacillus together with a Gram-negative bacillus. Rat 293: spleen much enlarged; liver enlarged, soft and friable; mesenterics injected; reddish fluid in peritoneal cavity, heart-blood gave the bacillus in pure culture. Rat 294: spleen and liver not enlarged; gelatinous red-tinged exudate in peritoneal cavity; great injection of mesenteric vessels; heart-blood gave the bacillus in pure culture.

Sections of the spleen and kidney of rat 293 showed the bacillus more numerous in the spleen. Sections of rat 294 showed bacilli in the spleen, but not in the kidney.

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

NAVAL, MILITARY, AND AIR FORCE HYGIENE GROUP.

A MEETING of this group of the Society of M.O.H. was held at 1, Upper Montague-street, on June 30th, Lt.-Col. H. R. KENWOOD, the President, being in the chair, when Col. H. W. GRATTAN, Deputy Director of Hygiene, War Office, read a paper on the

Coöperation between the Civil and Military Sanitary Authorities during a Great National Emergency.

Col. Grattan said it was clear that coöperation would be simplified when both the military and civil sanitary authorities had a good working knowledge of each other's administrative machinery and organisation. In order to ensure the application of local knowledge it would be necessary for the civil and military to be in practical communication with one another—not only at headquarters, but also in the outlying areas and districts. The following list of subjects would require consideration: (*a*) Inter-notification of infectious diseases; (*b*) water-supplies, including extension of water mains; (*c*) drainage and conservancy arrangements; (*d*) control and accommodation of cases of infectious disease; (*e*) disinfection of clothing and blankets; (*f*) arrangements for ablution; (*g*) destruction of refuse; (*h*) supervision over the preparation of the food-supplies for the army; (*i*) the prevention of spread of infectious disease on mobilisation; and (*j*) the treatment of soldiers discharged from the army on medical grounds.

The secret of success in organisation lay in decentralisation, and one of the first steps would be to arrange a conference between representatives of the Ministry of Health and the War Office with a view to coördinated action. Liaison officers would be required in London, and in the provinces the Ministry of Health should allot medical inspectors to certain administrative areas, with the special duty of assisting coöperation between military and local authorities. Instructions might be issued by the Army Council to commands, and circular letters from the Ministry of Health to civil sanitary authorities pointing out the means to be adopted to ensure coöperation. Col. Grattan referred to the circular letter issued by the L.G.B. early in the war to sanitary authorities in which the duties of an M.O.H. of a district containing troops were defined. Difficulties occurred later in bringing military and civil sanitary authorities into touch, as military officers were unaware of the boundaries of the civil sanitary districts; similarly M.O.H.'s lost time in tracking down the military officers. The two organisations differed widely, and in order to prevent confusion and overlapping it was essential for a military command to realise the principles on which the civil sanitary organisation of an area was based, otherwise delay would occur by reference to a central civil authority having possibly little immediate local jurisdiction. It would undoubtedly be an advantage if the county authority, which controls and administers measures relating to tuberculosis, small-pox, venereal disease, maternity and child welfare, and the pollution of rivers, would also take up the question of coöperation with the troops in matters of public health.

Lt.-Col. CALDWELL SMITH illustrated from his own experience the value of coöperation with local authorities by personally enlisting the sympathy not only of the M.O.H. of the area concerned, but also the sanitary inspectors and chairmen of public health committees.

Maj.-Gen. Sir W. G. MACPHERSON said that billeting was often unsatisfactory because the police made arrangements without in the first instance consulting the local sanitary authority. At the beginning of the war the L.G.B. gave every assistance to those entrusted with maintaining the health of the troops by sending medical inspectors to different parts of the country.

Col. Sir G. SIMS WOODHEAD said that before the war no preparation had been made for a real sanitary service. This work fell largely upon the R.A.M.C. (T.F.), with its two sanitary companies, so that when war broke out this essential work was carried out by a few men. The time was ripe for organising the sanitary services and the liaison between the army and the civil services. To illustrate this need he instanced the erection of a hutted camp, with huts inadequately ventilated, where later an epidemic of cerebro-spinal fever occurred. One way of bringing about a closer coördination was for responsible civil posts to be made available to service-trained men on their retirement.

Surg.-Rear-Admiral Sir P. W. BASSETT-SMITH, speaking from the naval point of view, said that by the development of a naval health service a real effort was being made to bring about closer coördination.

Major J. HUTCHINSON WOOD considered that medical officers had too often been overruled by the higher authorities in local commands, particularly in regard to the selection of camp sites.

Lt.-Col. ANDERSON said the quartering committees were excellent liaison arrangements, the local M.O.H. being a member of the committee. A scheme for coöperation had actually evolved towards the end of the war.

The PRESIDENT endorsed the opinion that full advantage had not been taken of local knowledge, little opportunity was given for local initiative. It

was the peculiar duty of the group to ensure that the outcome of the discussion should not be lost sight of. The question of county survey was a subject which was receiving consideration by the group, and it was now proposed to approach the War Office with a view to further the work.

SOCIÉTÉ DE THÉRAPEUTIQUE DE PARIS.

AT a recent meeting of this Society Mr. PIEDALLU made a communication on a case of Uncontrollable Hiccough Cured by Aspirin. The patient was an alcoholic man, aged 67, suffering from pneumonia and delirium tremens. The hiccough had lasted for five days and five nights in spite of all the usual antispasmodics administered, such as belladonna, camphor, bromides, &c. A gramme of aspirin was then given as recommended by Petgès at a previous meeting of the Society, and within 24 hours the hiccough was cured.—Mr. R. HUERRE read a paper on the Solubility of Sulphur and its Clinical Applications, in which he maintained that sulpho-carbonate solutions of sulphur should be prepared with precipitated sulphur, and not sublimed sulphur, containing a large proportion of insoluble sulphur. —Mr. HENRY BOURGES read a paper on the Treatment of Acute and Chronic Gonorrhœa by Permanganate of Silver. The silver salt was used in very dilute solution, which was prepared with hot water immediately before use, the injections being given as soon as the solution became cool. In acute urethritis daily lavage with 0·05 g. per 1000 was employed, and in chronic urethritis a solution of 0·10 g. was given daily or every other day. In washing out the bladder progressively increasing doses were given, commencing with 0·02 g. at first, and raised the following days to 0·03, 0·04, and 0·05 g. The silver salt gave better results when employed from the first than permanganate of potash. —In a paper on Opotherapy and Mild Forms of Graves's Disease MM. MARIE and FOURCADE reported ten cases in women, aged from 19 to 47, under treatment for mild attacks of Graves's disease which were apparently due to emotion and commotion connected with the war, such as air-raids and long-distance bombardments, but really caused by old-standing disturbance of the glands of internal secretion. The diagnosis was confirmed by the improvement following treatment by ovarian or pituitary extract.— Dr. NAAMÉ, of Tunis, read a paper on the Treatment of the Vomiting of Pregnancy by Thyro-ovarian Extract. He referred to his previous paper read before the Society in 1905, when he attributed the vomiting of pregnancy to auto-toxæmia due to thyro-ovarian insufficiency. The disappearance of vomiting about the middle of pregnancy was due to establishment of a glandular equilibrium owing to hypertrophy of the thyroid gland. Thyro-ovarian opotherapy, by favouring the development of this hypertrophy, caused a rapid cessation of the vomiting. A cachet containing thyroidin, 0·05 g., and ovarin, 0·10 g., was given three or four times a day, half an hour to an hour before food. Mr. Naamé stated that he had employed his treatment with success for 19 years.—Mr. AUGUSTE LUMIÈRE, of Lyons, read a paper on Boro-potassic and Boro-sodic Tartrates, in which he stated that he had prepared a boro-sodic tartrate which appeared to possess all the conditions required to obtain the maximum advantages from boric acid with the minimum drawbacks. He claimed that the substitution of boro-sodic tartrate for potasso-sodic tartrate was justified on chemical, physiological, and clinical grounds. —Mr. G. LEVEN read a paper entitled "General Alimentary Therapeutics," in which he maintained that there need be no special diet for different diseases. What was harmful to the dyspeptic was injurious to the cardiac, the renal, the tuberculous, &c. The variations in a particular diet, like the prognosis, should be determined by the gravity of the disease and not by its nature.

REVIEW OF PENSION APPEALS.—The Minister of Pensions was recently asked if he was aware of many cases of claims being disallowed by the pensions appeal tribunal, in which the decision had not been in accordance with the medical evidence or had been based on inaccurate and insufficient evidence or a faulty record of the medical history or record of service of the claimant; and whether any machinery existed or could be created through which cases of hardship arising on any of the grounds indicated could be reopened and reviewed.—Major Tryon replied that the pensions appeal tribunals were independent statutory bodies under the control of the Lord Chancellor, and that their decisions were final and binding on both the man and the Ministry. It was the practice to furnish the man with a précis of the evidence, if he so desired, thus giving him an opportunity of calling attention to any omission which he considered might be prejudicial to his claim.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

WEDNESDAY, JULY 20TH.

At the first session, Prof. MATTHEW J. STEWART (Leeds), the President, being in the chair, a discussion took place on

Hæmochromatosis.

Prof. J. SHAW DUNN (Glasgow) said that the term hæmochromatosis had come to be applied to a peculiar morbid condition, characterised by an accumulation of free iron-containing pigment in certain parenchymatous organs and in the skin, associated with interstitial fibrosis of the liver and pancreas, and, in some cases, with glycosuria. The liver, pancreas, and retroperitoneal glands showed a peculiar rusty colour, and gave an intense Prussian-blue reaction. Most other organs, although they might not be obviously pigmented, also gave the iron reaction on testing. Histological examination revealed the presence of brown granular pigment in proportion to the strength of the iron reaction seen on testing macroscopically. If cold hydrochloric acid were employed, the granules in the liver cells gave an intense blue colour, but the pigment in the fibrous tissue coloured a greenish brown. It would therefore appear that the iron was chemically in a more free condition when first deposited in the liver cells. In the pancreas, the islets of Langerhans were less pigmented than the ordinary gland tissue. Apart from the liver and pancreas, the iron granules were not associated with special degenerative phenomena of the tissues. The disease was usually seen in middle-aged patients, and the early stages were unassociated with symptoms. Neither pigmentation nor cirrhosis were primary symptoms; both were probably due to a common cause. Chemical examination of the organs showed that while there was no evidence of alteration in the total amount of iron in the blood, the excess in various organs was very great. The liver contained about 100 times the normal percentage. Even if all the iron ingested in the food were retained in the body, it would take at least three years for the accumulation of the amount seen in hæmochromatosis. In point of fact, retention of iron was not always absolute. None had been discovered in the urine by different observers, but a certain amount, though less than normal, was excreted in the fæces. This meant that the period of development of hæmochromatosis must be more than three years, and the iron accumulation was in all probability going on during the whole life of the patient. The excess of the iron was not due to an excessive breakdown of red cells; probably the condition was the outcome of a congenital metabolic peculiarity.

Dr. W. H. MAXWELL TELLING (Leeds) said it was still an unsettled question as to whether hæmochromatosis was a separate disease or just a stage of development of certain forms of cirrhosis of the liver, but the main clinical and pathological features were so distinctive that most observers regarded it as a definite entity. It occurred between the ages of 30 and 60, and was almost exclusively confined to males. The disease lasted two to three years as a rule, and there was sometimes an alcoholic history. Diabetic phenomena were slight or moderate, and occurred, if at all, late in the disease. The liver was considerably enlarged, and abdominal distension with attacks of diarrhœa, alternating with constipation, were common. The pigmentation of the skin varied from a leaden colour to a more definite bronzy appearance. The patients were curiously listless and apathetic in a way that was often seen in Addison's disease, to which the pigmentation added another resemblance. The disease was uninfluenced by treatment, and there was progressive cachexia till

death. He considered that the condition was due to defective iron elimination, and that the cirrhotic process was secondary to the irritation by the massive pigment deposit. Primary carcinoma of the liver had occurred in several cases. He thought every case of cirrhosis of the liver should be carefully investigated from the hæmochromatosis point of view. In early cases the deposition of the iron pigment might be missed.

Discussion.

Dr. J. F. GASKELL (Cambridge) described a case which had been investigated by himself and Dr. Mackenzie Wallis. The conclusion arrived at was that the tissues had an abnormal affinity for iron. The condition of organs in normal and abnormal excretion of iron was interesting. In the kidney the iron was found in the glomeruli and tubules of the first order only. This was entirely different from its distribution in the conditions of blood destruction such as pernicious anæmia. In the liver the iron was accumulated round the bile canaliculi, and also in the walls of the bile-ducts. The condition suggested an attempted excretion by normal channels associated with rapid reabsorption. It was possible that there was an essential disorder of iron metabolism with the presentation of the iron to the tissues in an abnormal form.

Dr. MACKENZIE WALLIS (London, St. Bartholomew's) defined hæmochromatosis as a condition in which iron-containing pigments were deposited in certain tissues in abnormal amounts. In searching for cases of bronzed diabetes types he had come across various forms of pigmentation in diabetics, not due to iron. In xanthoma diabeticorum a canary-yellow pigmentation of the hands and feet was present. He was inclined to think that this pigmentation had no reference to hæmochromatosis, but was at present investigating a case. He regarded the cirrhosis as caused by the free iron pigment; the masked iron pigment represented an attempt on the part of the body to get rid of the pigment by means of the lymphatic system.

Dr. J. CRUICKSHANK (Aberdeen) described a case which had recently come under his observation but was not yet fully worked out. Golden-brown pigment which did not contain iron had been found in many organs. There was no obvious relation between P.M. and clinical symptoms.

Prof. J. M. BEATTIE (Liverpool) described a case in which diabetes had been present three years before bronzing of the skin, showing that diabetes was not always a late symptom. In this case a large quantity of iron had been found in the intestine.

Prof. STEWART said that probably hæmochromatosis was not such a rare disease as was thought. The diagnosis during life was difficult, but surgeons might throw more light on the subject by examining the abdominal glands in cases where a laparotomy had to be performed. It might be possible to detect iron pigment in the epithelial cells in the urine.

Prof. SHAW DUNN, in reply, said that the yellow, non-iron-containing pigment was probably the same as that found in brown atrophy of the heart, &c., and was not characteristic of hæmochromatosis. On the whole the appearances suggest that in hæmochromatosis the iron was first deposited in the cells on normal physiological lines, but in an exaggerated form. For the recognition of early cases it would appear that pigmentation of the skin was the likeliest feature to rely on.

The Streptococci.

Prof. BEATTIE said that the high frequency of hæmolytic streptococci in the human throat might explain the important rôle these organisms played as the secondary invaders in a multitude of diseases. At the same time it must be recognised that, like the pneumococcus or *B. diphtheriæ*, they might be present in the normal throat (14 to 90 per cent. of cases), and under certain conditions might become the causal agent of disease. It was significant that various acute infections started with a "sore throat." The importance of a systematic classification of streptococci was very great. The morphological and cultural reactions were unsatisfactory for the purpose, as the types defined by them had no relation to pathogenicity. Hæmolytic and immunological reactions were useful. Hæmolytic strains of streptococci were associated with acute infections. Technical difficulties in the way of agglutination and precipitation tests were great, but there was evidence that these were being gradually overcome, and that serums had been prepared which were highly protective to white mice against infections with organisms of the homologous type. From the experimental side it seemed perfectly clear that the streptococci of human origin were not a unit, but that several types existed; that these types could be differentiated by immunological and other reactions, and that homologous serum could protect against infections. At present these homologous serums were not of practical value in human infections, but the line of work opened up was of very great importance, and there was every hope that the results with antistreptococcal serum would be as brilliant as those obtained in the past with antimeningococcal serum.

Dr. H. WARREN CROWE (Harrogate) proposed to widen the discussion to include the non-hæmolytic streptococci such as the pneumococcus and *S. viridans*. He showed a medium composed of heated blood which would enable streptococci to be differentiated into a large number of types. He discussed the relation of the organisms to rheumatism. Seven or eight varieties of streptococci could be cultivated from one tooth, and in the treatment of rheumatoid arthritis a vaccine from each of these organisms must be prepared.

Dr. G. H. DIBLE (Southampton) said that the problems that confronted us were numerous and difficult. A classification to be effective must contain the following three points: (1) the tests used must be simple; (2) there must be clear lines of division between the groups; (3) the classification must have a definite meaning as regards pathogenicity. He divided the streptococci into two main groups—the hæmolytic and the non-hæmolytic. Each group had four sub-groups based on an association of characters, such as heat resistance, fermentation of sugars, &c.

Dr. J. W. MCLEOD (Leeds) described his experiments with hæmolytic streptococci. He was sceptical as to the value of specific serums. His serum did not protect rabbits inoculated with a virulent strain of hæmolytic streptococci, although normal horse serum had delayed the fatal result.

Dr. W. FORD ROBERTSON (Pathologist, Scottish Asylums) put forward a classification which had yielded satisfactory results. He found his methods of great use in the preparation of vaccines.

Prof. BEATTIE, in reply, said he was very sceptical of classifications based on one or two characters only. A classification should give some idea of the degree of pathogenicity and whether homologous serums could be used.

THURSDAY, JULY 21ST.

Relation of Carcinoma to Infection.

Dr. FORD ROBERTSON said that for many years he had maintained that carcinoma was an infection. He had found rod-shaped bodies in cancer cells, and he considered these as a stage in the life-history of a carcinomatous organism. Using special culture methods he had been able to convert aerobes into anaerobes. An anaerobe might get into a living cell and multiply, and then one of two things would happen: the cell might die, or growth might be stimulated. In the latter case the cell would divide and might acquire a habit of division. To confirm his hypothesis that cancer was caused by anaerobic organisms, he had recourse to four methods. Firstly, direct examination of epithelial cells showed that minute rods resembling bacilli were present in special areas. Secondly, he had succeeded in making cultures from the freshly scraped surface of a tumour, and had grown minute granular rod-shaped bacilli, similar to those seen in sections. Thirdly, he had succeeded

in producing cancer in mice by inoculation with these organisms. Fourthly, he had produced a focal reaction in the tumour after injection of minute doses of vaccine from these organisms. He concluded that cancer was due to anaerobic bacteria attacking cells during a period of enfeebled resistance.

Dr. J. A. MURRAY (Director, Imperial Cancer Research Fund) said that mammary tumours in mice were common, and this, together with the very great variability in the length of incubation in Dr. Robertson's experiments, and the fact that there was no constant relation between the site of inoculation and the site of the tumour, caused him to doubt whether there was any specific relation between the organisms and the tumours described. Dr. Murray saw the rod-like structures demonstrated at Oxford 14 years ago, but he still held that they were not bacteria. He mistrusted results which depended on metallic impregnation methods of staining.

Blood Platelets in Scurvy.

Dr. S. PHILLIPS BEDSON (Newcastle-on-Tyne) read a paper on the Blood Picture in Scurvy with Particular Reference to Platelets. In pathological conditions, he said, which are accompanied by a diminution in the number of blood platelets, a tendency to hæmorrhage is almost always observed. In scurvy we had a clinical condition in which hæmorrhage was a constant feature. The question therefore arose as to whether or not the platelets were reduced in numbers in the acute stages of scurvy. Dr. Bedson showed tables of results obtained from experimental animals and from one human case. In all neither platelets nor red cells were diminished. Indeed they increased somewhat in what was termed the "pre-scurvy" period, dropping again to normal at death.

Pathology of Gastric and Duodenal Ulcer.

Dr. A. G. GIBSON (Oxford) described his experiments with a streptothrix obtained from a case of acholuric jaundice. The organism was injected into the peritoneum of monkeys. After some months the monkeys were seen to fail in health; they had occasional rigors and tenderness over the spleen. Post mortem several circular ulcers were found in the stomach; the spleen was fibrotic; the liver showed areas of atrophy, and there were hæmorrhages in the lungs. Microscopically endophlebitis was seen in all these organs. Dr. Gibson said that the gastric ulcers were produced by infective material passing to the stomach via the splenic veins. He did not think, however, that this was the usual method whereby gastric ulcer was caused in the human subject.

Dr. D. P. D. WILKIE (Edinburgh) said he was about to describe a pathological and clinical entity not usually recognised by pathologists. This was a condition of dilatation of the first three portions of the duodenum with congestion and hypertrophy of its walls. Chronic vomiting was a symptom in many cases. In one case there were periodic attacks of acute pain of such a nature that the disease was mistaken for gall-stones. The duodenum was dilated up to the point where it is crossed by the mesenteric artery. In cases where there was slight visceroptosis, so that the small intestine hung over the brim of the pelvis but did not reach its floor, the duodenum might be subject to intermittent compression by the artery. Cases, however, occurred in children, and were then undoubtedly of congenital origin. The treatment of the condition was to anastomose the third part of the duodenum to the jejunum. Sometimes it was possible to raise the colon and to relieve the obstruction in this way. The condition might be associated with duodenal ulcer, acute pancreatitis, or with disease of the biliary apparatus.

Experimental Tar Cancer in Mice.

Dr. J. A. MURRAY gave a description of the work which he and Dr. W. H. Woglom (New York) had carried out in producing cancer by painting the skin of mice with tar. The tar was applied to the skin at the back of the neck two or three times a week for some months. Then, in a few animals, warty growths appeared and increased in size as long as they were painted. Portions of these growths were inoculated into the same animals, and they continued to grow progressively and sometimes formed metastases. When autogenous inoculation was performed with benign tissues growth ceased. Malignant tumours grew progressively. The great difficulty with which all workers in cancer research were faced was what criteria should be adopted in deciding whether a growth was innocent or malignant. Tar cancer had been produced by Japanese observers, but their observations did not prove that the growths so obtained were really cancerous.

Dr. GASKELL said that Dr. Murray's work was epoch-making, in that it pointed to a method which might be reliable in the study of cancer. He wished to know whether it was possible to perform the experiments in an aseptic manner, so as to eliminate the bacterial factor in the production of cancer.

Dr. FORD ROBERTSON congratulated Dr. Murray on his very interesting and important observation. The question of ætiology of cancer was not solved. He thought that the skin lesion produced by painting with tar opened the way for infection.

Dr. A. LEITCH (Cancer Hospital, London) said that spontaneous tumours often developed during experiments. Carcinoma could not be diagnosed with certainty by pathological methods. Even if a tumour grew progressively on transplantation it was not necessarily malignant.

Dr. MURRAY said that sterilisation was ideal but not possible in the animal body. He agreed with Dr. Leitch that there was no definite line of demarcation between malignant and benign tumours.

FRIDAY, JULY 22ND.

On this day a joint discussion with the Section of Medicine and of Physiology, Pharmacology, Therapeutics and Dietetics took up the subject of

Renal Function Tests.

Prof. HUGH MACLEAN (London, St. Thomas's) said that in recent years much attention had been paid to tests for renal function, and that now we were in a position to assess the condition of the kidney with some degree of accuracy. He would devote himself chiefly to the clinical side of the question, and to acute nephritis in particular, since in the latter disease the tests were of special importance. Retention of salt was important in acute nephritis. One of the first indications of improvement was the return of salt in the urine, and this generally occurred simultaneously with diuresis. The stimulation by retained urea and by œdema produced diuresis as soon as the kidney cells could respond. In well-marked acute nephritis no tests for renal efficiency were necessary; the condition was sufficiently indicated by the symptoms. But later, in order to ascertain what progress was being made, tests were of the greatest value. One of the most important was the determination of urea in the blood. The normal amount was about 20 to 40 mg. per 100 c.cm. of blood. Until three-quarters of the kidney substance had been put out of action no retention of urea took place. The fallacy of the blood-urea test was that, in chronic cases, it gave no indication of deranged function until the disease had reached such a stage that the clinical condition alone would give the information required. In acute nephritis, however, the test was invaluable. Blood urea rose steadily in fatal cases even when the clinical condition seemed good. Concentration of urea in the blood had no relation to uræmia, except that both were the result of renal insufficiency. Reduction of protein in the diet reduced the urea but did not stave off uræmia. As regards other methods, the diastatic test was of some value, but he would not rely on it alone. The phenol-sulphone-phthalein test was useful but difficult to carry out with accuracy. The urea-concentration test was simple to carry out and gave very constant results; it had the advantage of

showing a lesser defect in the kidney than was shown by a rise in the blood urea. In order to carry out the test 15 g. of urea were given in 2 or 3 oz. of water. The patient emptied his bladder at the time of taking the urea, and again one hour and two hours later. If more than 2 per cent. urea was excreted, the kidneys were fairly healthy. As regards salt excretion, there was no means of testing it directly, but the defect would be shown by the presence of œdema. Salt was present in the body fluids in the proportion of 0·6 per cent. If the kidney was not excreting salt, water would be retained; if the secretion of water was deficient, salt would be retained so as to keep the percentage constant. Neither high blood pressure nor albuminuria was necessarily associated with renal defect. Examination of the kidney by means of these tests was extremely important, especially in surgical affections of the urinary tract, where the inefficient kidney was a contra-indication to operation.

Prof. W. BOYD (Manitoba) said that from the clinician's point of view the functional capacity of an organ was an essential point. It had been advised as an efficiency test of renal function that two-hourly samples of urine be collected; measuring the quantity and taking the specific gravity of each sample might give information of value. The normal kidney would eliminate amounts of urine varying according to the amount of fluid taken—the specific gravity varied widely. The sclerotic kidney would excrete practically the same amount of water and solid every two hours. This tendency to uniformity in the amount of urine and specific gravity was known as fixation of the kidney. Unfortunately "fixation" was not a reliable indication of impaired kidney function. Neither the potassium iodide nor the phenolphthalein tests were satisfactory. He preferred to place reliance upon the estimation of blood urea. In his experience, less than 50 mg. of urea per 100 c.cm. of blood had a favourable prognostic significance. If the blood urea rose over 50 mg. stringent non-protein diet was called for. Above 100 mg. the prognosis was exceedingly grave.

Dr. MACKENZIE WALLIS, after a considerable experience of tests, had limited them to four or five. The water test was simple and very efficient. 500 c.cm. of water were given, and the volume of urine measured every half hour for four or five hours. A normal individual excreted the whole volume in the first hour, no matter what amount had been given. He agreed with other speakers as to the estimation of blood urea and the urea-concentration test. He was also an advocate of the value of estimating the diastase in the urine. Recently he had worked on the question of blood sugar in nephritis, and found that it was raised, whereas normal sugar excretion was diminished.

Dr. W. MACADAM (Leeds) thought that the urea-concentration test was not always reliable in surgical cases. The urea output was occasionally found increased in parenchymatous nephritis or pyelonephritis. Mechanical obstruction interfered directly with kidney function, and was associated with changes in the glomeruli.

Dr. D. W. PATTERSON (Newcastle) spoke of his experience with men invalided as the result of war nephritis. In most cases renal function had recovered, but cardio-vascular changes suggested that permanent damage had been done to the kidney. He agreed as to the usefulness of the water, urea-concentration, and diastase tests.

Dr. R. ERRINGTON (Sunderland) had worked along the lines suggested by Prof. MACLEAN and had obtained satisfactory results. He relied generally on the urea-concentration and diastase tests, and had found they corresponded in 85 per cent. of 1000 cases.

DEMONSTRATIONS.

Protein Skin Tests in Asthma.—Dr. MACKENZIE WALLIS demonstrated the cutaneous reactions obtained in asthmatics with various proteins. He had grouped several closely related types of protein together and combined them into six tests; for example, all the various animal proteins including epidermal, fur, feathers, &c., were used together. If a positive skin reaction was obtained, the particular type of protein causing this reaction has then to be determined separately. After cleansing, the skin was scratched just sufficiently to break the surface without producing bleeding. A positive reaction was shown in a few seconds by a zone of hyperæmia, spreading outwards from the area tested. This was followed by a definite urticarial wheal. In many cases of asthma, the patient was found to give positive reactions to one or more groups. The largest proportion of cases reacting to these skin tests were found to be sensitive to pollens. In the animal group of proteins, feathers appeared to be responsible for the most cases. Care had to be taken to avoid too severe a reaction in a highly sensitive person, and the tests should not be done immediately after an acute attack.

Renal Function Tests.—Dr. Wallis also demonstrated microchemical methods for the estimation of urea in blood, sugar in blood, and sugar in urine. These methods possessed the advantage that they could be easily applied without any inconvenience to the patient. The small quantities of blood required could be obtained by a simple prick of the finger. The blood could either be weighed by absorbing it on a specially prepared filter-paper and weighing on a torsion balance, or the blood could be drawn up into a small graduated pipette. The blood was extracted with distilled water and estimations of urea and sugar made upon the extracts. The use of a tungstic acid method of precipitation of blood proteins devised by Folin and Wu in America rendered such observations possible. It was possible to make an estimation of the blood urea and blood sugar in a very short time, and the estimation of the urinary sugar content could be carried out simultaneously. With these methods it was possible within the space of one hour to obtain considerable information which was of value in the diagnosis of renal insufficiency.

PATHOLOGICAL MUSEUM.

A notable feature of the meeting was the collection of specimens arranged in the College of Medicine by Dr. A. D. BERNARD SHAW, secretary of the Pathological Museum Committee. Material had been asked for under the following headings: (1) Exhibits bearing on discussions and papers to the various Sections; (2) specimens and illustrations relating to any recent research work; (3) instruments relating to clinical diagnosis and pathological investigation; (4) individual specimens of special interest or a series illustrating some special subject.

Some very fine exhibits were lent by the Pathological Museum of Durham University, from among those recently added by the curator Mr. W. E. M. WARDELL. A remarkable series consisted of groups of specimens illustrating the pathology of individual cases. All the more important blood diseases were thus represented. On one table, for instance, were placed the spleen, liver, heart, glands, and bone marrow from two cases of myelogenous and of lymphatic leukæmia respectively. Together with each set of organs was appended a history and description of the patient. In the same way were shown pernicious anæmia (here a portion of the liver had been treated to show the Prussian blue reaction for siderosis), lymphadenoma, status lymphaticus, and an interesting case of exophthalmic goitre in a discharged soldier. The two latter were placed side by side to emphasise the lymphoid overgrowth in both. A case of pyæmia following osteomyelitis in a child was similarly arranged. The femur showed septic infection of the shaft with separation of the epiphysis of the great trochanter, and was surrounded by the heart, showing acute infective endocarditis, and the lung, kidney, and intestine containing septic infarcts. Next to it was a case of blood infection by the streptothrix of actinomycosis; the primary lesion was in the lung and pleura. The honeycombed appearance produced by actinomycosis contrasted clearly with

the more usual type of abscess seen in infections by the commoner pyogenic organisms. There were also malignant endocarditis with infarcts in various organs and one case in which a piece of a clot riding astride a patent foramen ovale had broken off and lodged in the middle cerebral artery, causing softening of the brain. The teaching value of such a collection is evident. In no way inferior were the series of organs in which each specimen illustrated a typical lesion. Each of its kind was perfect. Among the hearts were beautiful examples of pericarditis, and one especially where the sac was shown distended by a very large effusion. Similarly, in the lung series, a student might find examples of the principal diseases affecting that organ. The specimens were so good that the lesion could be identified at a glance. Among the stomachs was a remarkable dissection showing the lymphatics of that organ permeated by cancer. New growths of the alimentary canal were well represented, and there were several excellent specimens of foreign bodies, as well as of cancer, in the œsophagus.

A very interesting collection of syphilis in various organs was lent by Sir CLIFFORD ALLBUTT. Microscopical sections were appended to each of the organs shown. The series showing syphilis of arteries was extremely complete. Another beautiful exhibit illustrating a special paper was Prof. STEWART'S collection of organs from cases of hæmochromatosis. Portions of liver and pancreas, spleen and glands were shown from several cases. In three, carcinoma had supervened in the liver on the top of the primary lesion. Considering the rarity of carcinoma of the liver, its occurrence in such high proportion was very striking.

Among the exhibits illustrating recent research, mention must be made of Dr. DA FANO'S remarkable sections from cases of encephalitis lethargica. The first four preparations illustrated the pigmented and non-pigmented granules first discovered by himself in this disease. Others showed the typical perivascular and interstitial infiltration. In one very interesting acute case, where death took place on the third day of the illness, the infiltration was seen to be composed of polymorphs and macrophages instead of the usual lymphocytes and plasma cells. One section showed an inflamed salivary gland—an interesting confirmation of Netter's observation that as in rabies, so in encephalitis lethargica, the salivary glands may be the seat of infection. Sections from encephalitis lethargica were also shown by Dr. SHAW. They illustrated clearly the focal œdema, perivascular hæmorrhage, and neuronophagia seen in this disease.

Another exhibit of the results of research, which also illustrated a paper read at the pathological section, was shown by Dr. FORD ROBERTSON. He has by using special methods succeeded in cultivating an anaerobic diphtheroid organism from scrapings from malignant tumours, and seeks by his experiments to prove that this organism is the cause of cancer. His preparations showed cancerous tumours which had developed in mice following inoculation by this organism; the tumours were present in several different organs, although the inoculations had been made subcutaneously.

Among the pathological curiosities of the museum must be mentioned a case of malakoplakia of the kidneys and bladder. Only 22 instances of this rare disease have been reported and this is the only one in which the kidneys are affected. Macroscopically small greyish semi-transparent nodules are seen in the mucosa of the bladder and in the kidneys. These nodules tend to coalesce. Microscopically large characteristic cells are seen with cell inclusions somewhat resembling the corpora amylacea of the prostate. The cause of the disease is quite unknown, but it appears probable that it is due to an infective agent. Another unique specimen was a calculus hydronephrosis of the kidney due to cystin calculi. The dilated pelvis contained small round stones and a larger one blocked the ureter. A case of hypernephroma with secondary deposits in the heart and other organs was also shown. An astonishing tonsillar calculus, measuring two inches in length, excited considerable curiosity. The specimen came from the East, the home of pathological monstrosities. Among the tumours a rare specimen was that of lipoma glandulare, lent by the West London Hospital. The fat in this tumour has the peculiar arrangement of that found in hibernating glands of animals. Such tumours arise in the region of the shoulder and are thought to be derived from a vestigial hibernating gland in man.

Treatment by radium was illustrated by means of photographs and the various tubes used were shown.

Besides pathological specimens a large and extremely interesting collection of X ray plates and prints was on view. They ranged from an excellent series illustrating bone deformities to tuberculous lungs, which were illustrated by some very beautiful photographs. A very interesting exhibition was that contributed by Mr. THOMSON WALKER of X rays of renal calculi. The prints showed the calculi not only from the antero-posterior aspect, but from the lateral view as well. By this method renal calculi can be differentiated with certainty from gall-stones. With the technique elaborated by Dr. Knox, gall-stones, which were in former times only seen occasionally, can now be revealed with certainty. In one case renal and biliary calculi were present together and were clearly seen in the photograph.

Whether looked at from the teaching or from the purely pathological standpoint, the museum was a remarkable one. Museum workers might gain many ideas in the arrangement and mounting of specimens, while few could examine the collection without carrying away with them some new facts. The organisers may be congratulated on their achievement.

SECTION OF PHYSIOLOGY, PHARMACOLOGY, THERAPEUTICS, AND DIETETICS.

WEDNESDAY, JULY 20TH.

The proceedings began by a resolution moved by the President, Prof. H. H. DALE, F.R.S., and seconded by Prof. A. V. HILL, F.R.S. (Manchester), of regret and condolence on the sudden death of one of the vice-presidents, Prof. J. A. MENZIES.

Various Uses of the "Hot Wire."

The first paper was by Prof. HILL, the subject being "The Use of the Hot Wire for Investigating (*a*) the Time Relations of the Pulse; (*b*) the Characteristics of Voluntary Contractions in Man." The principle of the use of the hot wire is that if a platinum wire is heated by passing an electric current through it a puff of cool air on the wire will cause a change of electric resistance. This change can be recorded by means of a string galvanometer. The apparatus containing the hot wire was shown, and also the small funnel connected by an indiarubber tube, which transmitted the impulse from the pulse to the wire. Only the changes of current must be transmitted to the hot wire, and various methods were described to prevent the recording of the steady current used for heating the wire. A number of lantern-slides were shown illustrating the use of the hot wire. The tracings were in many cases taken simultaneously with a mechanical record by means of a mirror connected to a tambour. In all cases the records of the different phases of pressure in the pulse exactly coincided in the optical and hot-wire tracings. By this apparatus the velocity of the pulse can be very accurately measured, since simultaneous records can very readily be taken from different parts of the circulatory system. The apparatus is quite incapable of mechanical vibrations, and since the vibrations of the galvanometer can be completely damped an absolutely reliable record can be obtained. Since in tracings obtained by this method contamination by mechanical vibrations is prevented, this fact enables one by comparison to establish which of the vibrations obtained by other methods are mechanical in origin.

In the second part of the paper Prof. Hill described the method of using the apparatus with modifications for recording the electric changes in a contracting muscle. He found that in normal individuals 40 or 50 vibrations per second were recorded, but that in the case, e.g., of an old man, the record showed obvious tremors. His explanation of this was that in a contraction of the muscle not involving intense activity of the muscle some fibres only were in a state of contraction, and that these fibres were in a state of maximal contraction, obeying the "all or none" law. If the contraction was maintained there was a switching over to another set of fibres. In a healthy individual this switching over was so well coördinated that it occurred with perfect smoothness as shown by the curve. In fatigue or old age it was accompanied by tremors.

In the discussion the PRESIDENT and Dr. W. MARTIN took part.

The second paper was by Dr. W. R. GROVE (St. Ives) and Dr. H. W. C. VINES (Cambridge), on

The Ætiology and Treatment of Varicose Ulcers.

Dr. Grove said that in these cases there was a deficiency of ionised calcium in the blood, and intramuscular injections of calcium were tried. When improvement occurred it was found to be associated with a diminution of the calcium deficiency. Later thyroid extract and calcium were given by the mouth with negative results, except in one case, which showed a marked advance. This suggested the possibility of a contamination with parathyroid, and future cases were treated with parathyroid extract, which, especially in early cases, caused remarkably rapid improvement. Since it has been suggested by the authorities on the subject that the parathyroid gland controls the calcium metabolism of the body, these results indicate that parathyroid deficiency may be the primary cause of the varicose ulcers and explain the beneficial effect of parathyroid extract. In cases of gastric ulcer improvement also followed on the parathyroid administration.

The third paper, on

Anaphylatoxin,

was read by the PRESIDENT, who said, in substance: It is generally agreed that anaphylaxis is due to the formation of an antibody which combines with reinjected antigen. One theory attributes the symptoms caused by the reinjection to the occurrence of this combination in the cells. According to this view antibody in the blood is protective. The other theory supposes that union of antigen and antibody causes the formation there of a toxic substance—"anaphylatoxin." Many methods of imparting such toxicity to guinea-pig's serum have been found, most of them having little direct relation to anaphylaxis. Dale and Kellaway have investigated the nature of the change taking place in serum when it has been rendered toxic by incubation with starch, agar, &c. They find no evidence of protein cleavage, nor any change of viscosity or of surface-tension corresponding to the appearance of the toxicity. "Anaphylatoxin" does not act directly on plain muscle, as it should in theory, but by producing changes in the blood resembling the changes which precede clotting. An animal can be rendered immune to "anaphylatoxin" by a sub-fatal dose, and its serum will transmit the immunity to another guinea-pig; but this guinea-pig, if previously anaphylactic to an antigen, retains its sensitiveness unimpaired. Excess of antibody added to the saline bath in which anaphylactic plain muscle is suspended will protect it from the effect of the antigen. The author regards the similarity of the symptoms produced by "anaphylatoxin" to those of the true anaphylactic reaction as superficial and misleading, and adheres to the theory which attributes anaphylaxis to antibody located in the cells.

The proceedings terminated by a short paper from Prof. M. C. POTTER (Newcastle) upon

Certain Electrical Signs of the Human Body.

He described experiments showing that an E.M.F. was produced during the action of yeast on a solution of glucose. He demonstrated a negative charge in the breath exhaled in the human subject.

In the afternoon Dr. G. A. CLARK gave a demonstration on "The Passage of Sulphate through the Cells of the Tubules of the Kidney of the Frog." The aorta was perfused with oxygenated Ringer, and the renal portal vein with Ringer containing 0·2 per cent. sodium sulphate. The urine formed contained sulphate.

THURSDAY, JULY 21ST.

Dr. H. MUIR EVANS (Lowestoft) gave a paper on

Poison Organs and Venoms of Poisonous Fishes.

He described the position and histological structure of the poison glands in the spiny dog-fish, sting ray, and weaver. Specimens of these types were shown and microphotographs of the poison glands and surrounding tissue shown. The slides from which the microphotographs were taken were on view in the Museum. He described his experience of the effects of the wounds inflicted by the fish and the result of the poison. In the case of the wound inflicted by the weaver, one symptom is acute pain, such as to cause the sufferer to express the wish to have the part amputated. Immediate alleviation is obtained by the local subcutaneous injection of 5 per cent. potassium permanganate.

The second paper was by Dr. J. SIM WALLACE (London) on

The Physiology of Oral Hygiene.

He emphasised his view that the saliva was of greater value in connexion with oral hygiene than as a digestive juice. He disputed the importance usually attached to the ptyalin of the saliva and attributed its importance to the secretion of mucus, which he considers effective both in protecting and cleansing the teeth.

In the discussion which followed the paper he pointed out that yellow teeth had a thin covering of enamel, and white teeth a thick covering, but that yellow teeth were less liable to decay. He was opposed to the view that imperfect development of the teeth is due to lack of fat-soluble A in the diet.

Prof. C. H. BROWNING (Glasgow) was unable to be present, but sent to the President his paper on "Recent Work on Chemo-therapy."

A demonstration was given in the afternoon by Prof. POTTER of the E.M.F. produced by the action of yeast on glucose.

SECTION OF DERMATOLOGY.

THURSDAY, JULY 21ST.

At the meeting of the Dermatological Section, with Dr. J. FARQUHAR CHRISTIE, President of the Section, in the chair, the morning session was devoted to the reading and discussion of three papers.

Dr. GEORGE H. LANCASHIRE (Manchester) read a paper on

The Association of Skin Tuberculosis with Visceral and other Tuberculous Manifestations.

He suggested that the discussion should be concentrated on the practical point: How far is a subject of primary cutaneous tuberculosis liable to secondary visceral infection? The other side of the question—i.e., the secondary invasion of the skin from primary visceral disease—was much simpler and would include the following forms of cutaneous tuberculosis—scrofulodermia, verruca necrogenica from auto-inoculation, acute miliary tuberculosis of the mucous orifices, post-exanthematic dissemination, and the tuberculides. With regard to the tuberculides, the bacillary theory was now being more favoured than the toxic theory. Concerning the question for discussion, any evidence would be only statistical and presumptory, and the literature on the subject was somewhat scattered and fragmentary. Continental figures showed a high incidence of visceral—mainly pulmonary—tuberculosis, many of these with a fatal

issue, occurring in subjects after the appearance of lupus. Figures quoted from Forehammer, Besnier, Demme, Eibe, Leloir, Bendu, and others gave 21 to 62 per cent. of visceral tuberculosis, with death from phthisis in 5 to 21 per cent. of lupus patients. In this country he had not found any figures recorded showing such a great frequency of visceral disease. The family tuberculous history was of importance in the consideration of this question. In his own hospital cases of lupus there was a tuberculous family history in 23 compared with Sequeira's 40 and Bendu's 33 per cent. Dr. H. Osborne (deputy M.O.H., Salford) had furnished him with figures showing the incidence of cutaneous tuberculosis compared with other forms of tuberculosis for the last five years, which showed 2 per cent. of all cases. In the city of Manchester in 1913 the proportion of skin tuberculosis to other forms was about 3·5 per cent. From the Manchester and Salford Hospital for Skin Diseases a series of lupus cases (72), taken in the order of their notification about the year 1913, showed by 1921 visceral tuberculous disease in 11 per cent., with a fatal issue in about 4 to 5 per cent. (Dr. D. P. Sutherland). Of 50 cases of lupus vulgaris examined for signs of visceral disease, one had active phthisis which was prior to the lupus, two had the appearance of chronic phthisis with cough the only definite symptom and no other signs of activity without tubercle bacilli in the sputum, two presented evidence of old and apparently arrested phthisis. In the remaining 45 cases there were no physical signs distinctive of recent or old phthisis, though 21 of these allowed suspicion of tuberculous predisposition. There was a family tuberculous history in 12 cases (Dr. R. W. Marsden's report).

The discrepancy between the speaker's own and some of the continental figures could be interpreted in these latter through the contraction of visceral disease by predisposed subjects under their conditions of environment by the ordinary channels of infection without the lupus being itself causal. Otherwise we might reasonably expect greater uniformity in the figures of relative incidence from all countries. Dr. Stanley Griffith had found 50 per cent. cases from Dr. Lancashire's hospital yielding tubercle bacilli of bovine type. The great majority of the cultures were attenuated. His own conclusions were that whereas the causal relationship of primary visceral with secondary cutaneous tuberculosis was already established, the opposite causal relationship was not definitely proved, and that the majority of cases of cutaneous tuberculosis remained "good lives."

Discussion.

Dr. HALDIN DAVIS (London) did not agree with Dr. Lancashire's conclusions.

Dr. W. KENNETH WILLS (Bristol) mentioned that from some Bristol figures only 3 per cent. of his lupus cases showed other tuberculous lesions. As had been suggested to him the infection of the skin might occur from infected handkerchiefs through an abrasion. Lowering of resistance by tuberculin treatment might cause spread from the site of the local infection. He had seen Addison's disease follow the tuberculin treatment of a case of lupus. The high continental figures could be interpreted through the poor conditions, housing, &c., prevailing in some of the large continental towns.

Dr. R. CRANSTON LOW (Edinburgh) thought that this question should be looked at from the opposite point of view. The type of patient who had lupus was the type of patient with visceral tuberculosis. A probable high degree of sensitisation by avirulent tubercle bacilli suggested a good prognosis. Among patients without lupus there might well be an equal number with visceral tuberculosis, but such patients were not examined for the presence of tuberculous lesions without any local indication of the disease.

Dr. HENRY MACCORMAC (London) said that one of the most striking features of lupus was the distribution of lesions about the various orifices of the body. The connexion of visceral with skin tuberculosis depended upon the mode of infection. If the condition was usually a blood infection then most cases of lupus must be secondary to some internal tuberculous focus.

Dr. A. D. HEATH (Birmingham) considered that the bad hygienic conditions of cottagers might account for the high incidence among the rural population. He believed the cases due to infection with bovine types to be milder than the cases of human type infection. The more fibroid the lupus was, the greater was the involvement of the mucous membranes and the more likely to be followed by dissemination.

Dr. D. WELLS PATTERSON (Newcastle) had seen only four cases of lupus which were proved to have been followed by phthisis. He considered that the large number of cases of facial lupus was associated especially with lupus of the nasal mucosa.

Dr. S. E. DORE (London) had not seen one case of active pulmonary tuberculosis in association with active lupus. He believed that there might be auto-vaccination from the local lesion. In his opinion the clinical manifestations and behaviour of any case depended upon the anatomical disposition of the disease.

Dr. LANCASHIRE briefly replied.

Cutaneous Sensitisation and Focal Sepsis.

Dr. H. W. BARBER (London) read a paper on Cutaneous Sensitisation and Focal Sepsis in the Ætiology of Certain Skin Affections. He said that the first part of his paper would deal generally with protein sensitisation and focal sepsis, while in the second part some particular dermatoses would be considered. Our knowledge of protein sensitisation was based on the experimental work carried out on hay fever. For a long time the association of asthma with urticaria or eczema had been noted. Protein sensitisation was to a great extent bound up with the subject of food idiosyncrasy, and the periods of desensitisation resembled those of anti-anaphylaxis to experimental anaphylactic shock by protein injections. Many important papers had been written on this subject, especially in America, notably those of Schloss, Engman and Wander. He would draw special attention to the influence of (*a*) heredity; (*b*) gastro-intestinal disturbance in the occurrence of protein sensitisation. It was difficult to say how far the morbid reactions resulting from these idiosyncrasies to food, animal, or bacterial proteins were dependent on anaphylaxis. Concerning cutaneous tests for protein sensitisation he would say that a strong reaction was almost always an important aid to diagnosis and treatment, while a doubtful reaction might be equally important or of no practical significance. Grouped reaction occurred presumably dependent on a kindred chemical composition. In his own opinion the phenomenon of local sensitisation of the skin was of considerable importance. With regard to focal sepsis the commonest primary foci of infection were the teeth, tonsils, naso-pharynx and nasal sinuses, and possibly the intestines. In persons in whom digestion and assimilation were incomplete, or who suffered from inflammatory conditions of the intestinal mucous membrane, protein substances capable of acting as toxic antigens might be absorbed direct into the blood stream and provoke anaphylactic reactions. But other possible foci than those mentioned existed, such as the appendix, gall-bladder, lungs, ears, genito-urinary tract, and the female pelvic organs.

Turning now to individual skin affections or groups of affections he would say that typical cases of erythema multiforme as classically described by Hebra were probably always of bacterial origin, the organism being in most cases a hæmolytic streptococcus, as in purpura hæmorrhagica. One of the most widespread eruptions of erythema multiforme that he had seen occurred in a boy with chronic rheumatic heart disease within a few hours of tonsillectomy. The fact that the eruption recurred periodically in certain persons suggested that, like asthma and some forms of urticaria and eczema, it was an anaphylactic phenomenon. The majority of cases of erythema nodosum were,

he thought, unquestionably due to streptococcal infection. In his opinion those cases associated with tuberculosis were possibly really examples of Bazin's disease. In urticaria and angio-neurotic œdema—the commonest cutaneous reactions in cases of protein sensitisation—the eruption was, in some cases at any rate, a true anaphylactic phenomenon. While perhaps most cases of chronically recurring urticaria were due to food-protein idiosyncrasies, there was nevertheless a very important group of cases—sometimes with angio-neurotic symptoms and in women often associated with symptoms of hyperthyroidism—in which the toxic agent was evidently bacterial. The association of eczema with protein sensitisation and focal infection was now definitely established. Concerning eczema due to external irritants, such irritants may be either protein or non-protein substances, as in "baker's eczema," and that due to paraphenylendiamine in hair-dyes. The phenomena of idiosyncrasy towards drugs, chemicals, &c., and towards proteins were so similar that they might all be conveniently termed anaphylactoid. There were two main types of infantile eczema. The one form corresponding to the true seborrhœic eczema of adults was apparently associated with excessive carbohydrate feeding. The second form corresponding to Czerny's exudative diathesis group was probably always due to susceptibility towards one or more foreign proteins usually of food substances, though in a few cases the offending protein might be bacterial. Eczema of adults was less likely to be often due to food sensitisation but some were directly or indirectly due to focal infection, especially oral sepsis, and more particularly the eczema of the "nummular" type. With regard to lupus erythematosus, in none of the cases which he had investigated was there any evidence of active tuberculosis, but every one of them presented one or more definite foci of infection, especially oral and tonsillar sepsis. From some of his cases he had been able to recover *Streptococcus longus* from the fæces. An important feature of his series had been the accompaniment of the disease by definite arthritis. In the time allotted to him he was unable to discuss the herpes group of dermatoses or alopecia areata. In conclusion, he believed that the further study of individual peculiarities towards foreign proteins and bacteria was likely to solve some of the dermatological problems remaining unanswered.

Dr. CRANSTON LOW described experiments carried out on himself with the artificial production of sensitisation to primula by scarification, which experiments suggested not a local but a general sensitisation. He believed in the influence of heredity. Obviously there was some chemical substance in the different members of a group able to produce local reactions of varying intensity in sensitised subjects. This property of ability to react appeared to lie in and to be confined to the epithelial cells of the skin, in support of which belief were Bloch's skin-graft experiments. Test reactions to food protein were of very doubtful value owing particularly to the occurrence of periods of desensitisation, and in connexion with this part of the subject he would advocate the rubbing of the supposed sensitising substance into the unbroken skin after Moro's method rather than by scarification. He discriminated between urticaria and eczema—the one was a general vaso-motor effect, the second was an effect of skin sensitisation. In Edinburgh Hebra's prurigo was fairly common, often associated with asthma and eosinophilia, but dieting had no effect on this condition. He suggested that the patient by scratching might become sensitised to his own tissues. Dermatitis herpetiformis might be provoked by eating meat and with pemphigus might depend upon the absorption from the bowel of anaphylaxis-producing substances. With regard to lupus erythematosus he considered that Dr. Barber's experiments were in the right direction, but he personally had not seen any focal reaction to vaccines. In acute infections such as typhoid fever hypersensitisation always preceded immunity, while in chronic infective conditions the period of hypersensitisation might persist indefinitely.

Dr. HALDIN DAVIS was unable to follow Dr. Barber the whole way. All the various cutaneous irritants caused their own individual reaction in each case. In his opinion the exudative reactions were due to bacterial proteins. Focal sepsis was very common in any class of affection, dermatological or other.

Dr. KENNETH WILLS asked what definition of eczema should be adopted in the consideration of this question of sensitisation. Should the follicular type of infection in infants—associated with dry pityriasis capitis in the parents or nurse—be classed as eczema and was it due to protein sensitisation, or again the cases of the erythemata due to light occurring on the exposed parts of elderly patients?

Dr. BARBER replied, drawing attention to the presence of indicanuria in some cases of eczema excited by light.

Dr. CRANSTON LOW referred to eczema due to light and to the hæmatoporphyrinuria occurring in cases of hydroa vacciniforme, and suggested that the circulating hæmatoporphyrin (a hæmolytic substance under the influence of light rays) was the cause rather than an effect of this condition.

Dr. HENRY MACCORMAC read a paper on

Skin Diseases in Pensioners.

Our meagre knowledge of the ætiology of so many skin diseases occurring under ordinary circumstances made the question of the pensioner's claim a particularly difficult one. For resolving the problem into a less complicated form he suggested classifying all these cases as far as possible into three groups: i. Where the disease is definitely due to war service; ii. where it is open to question how far war service may have caused or aggravated the complaint; iii. where the condition should not be attributed to war service. Group i. would include all diseases of parasitic origin such as oriental sore, scabies, infected tuberculosis of the skin, and ringworm. Even at the present time pensioners presented themselves with conditions labelled scabies which had taken origin during the war. Some of these were instances of dermatitis due to the prolonged application of sulphur, others had been incorrectly diagnosed as scabies—for example, cases of dermatitis herpetiformis. This group should also contain two other classes: (*a*) Where the disease had arisen or become chronic owing to the impossibility of obtaining some special recognised form of treatment, and (*b*) where the remedial measures employed had resulted in disfigurement or injury. Group ii. comprised conditions such as eczema, psoriasis, and lichen planus. The assessor must be prepared to answer two questions: (1) If the condition had arisen during service, was it attributable? (2) If it had existed prior to this, how far had service aggravated it? Seborrhœic eczema was peculiarly prevalent among the troops in France—ranking third in incidence (from figures from No. 25 General Hospital, B.E.F.), after the two recognised infections of scabies and erythema—so that it would seem to have been directly connected with the conditions of army life there. If we considered eczema merely as a symptom of some underlying dyscrasia, a view whichwas not unsupported by facts, then might we not conclude that the abnormal state, of which the eruption was only a part, had resulted from a condition attributable to service? The rule of conceding that any first attack was attributable to service, and that a skin disease known to have existed during civil life, and which reappeared due to service had been aggravated by it, seemed equitable and just. Group iii. included conditions such as acne vulgaris and self-inflicted eruptions. Many youths who had entered the army were of the acne age-period, and there was no evidence that the circumstances of military life contributed in any way to cause this affection. Concerning the self-inflicted conditions, there was always the difficulty of obtaining the proof.

Dr. CRANSTON LOW maintained that each case must be considered on its own merits—e.g., a first attack of psoriasis had followed vaccination in the army, commencing on the vaccination site. He would draw

attention to the factor of repeated scratching in the prolongation of any eruption.

Dr. DORE did not agree with Dr. MacCormac in the exclusion of acne cases from the qualification for a pension.

Dr. HEATH remarked that in his opinion many of the seborrhœic cases should have been discharged much earlier from the army.

AFTERNOON SESSION.

At the afternoon session Dr. WELLS PATTERSON and Dr. S. THOMPSON demonstrated a series of very interesting cases in the skin department, Royal Victoria Infirmary. 1. Case of hydroa vacciniforme. 2. Case of a diffuse granulomatous non-ulcerated eruption involving symmetrically the whole buttocks and spreading forward between the legs on to the front and inner aspects of thighs in a middle-aged man. This condition had gradually extended from its commence- ment about the perianal region four years previously. Several areas showed slight scarring after treatment with acid nitrate of mercury while the greater part of the eruption in appearance suggested warty lupus. No biopsy had been made for histological examination, and the Wassermann reaction was negative. The general impression was that this condition was probably lupus, while the suggestion of a fungoid granuloma was also put forward. 3. Case of extensive florid lupus involving buttocks, thighs, lower part of abdomen with lesions on penis, and elephantiasis of penis and scrotum in a man aged 21. The condition had commenced in early childhood. 4. Case of middle-aged man with extensive erythema involving greater part of the trunk and upper third of both arms of ? four years duration, and with no subjective symptoms. Over the back and front of the chest the erythema appeared diffuse, while on the flanks and arms discrete, pinhead-sized, raised lesions predominated. One condition had originated over the upper part of the pre-sternal region and had gradually spread to the present extent. There was no scaling, nor scarring, with some slight suggestion of general thickening of the skin.

The general feeling of members was that the condition was probably that of angioma serpiginosum, though a tentative diagnosis of parakeratosis variegata was also suggested.

SECTION OF UROLOGY.

FRIDAY, JULY 22ND.

The first meeting of the new Urological Section was held on July 22nd, Mr. J. W. THOMSON WALKER, President of the Section, in the chair, when papers were read by Mr. J. F. DOBSON (Leeds General Infirmary) and by Dr. ALFRED PARKIN (Newcastle) on the

Diagnosis and Treatment of Cystitis.

In introducing his subject, Mr. DOBSON laid stress on the unsatisfactory condition of affairs in the treatment of cystitis. This was in all probability due to inaccurate diagnosis and failure to recognise the fact that inflammation of the bladder was frequently secondary to a focus of infection elsewhere in the urinary tract. The first step in diagnosis was the examination of the urine, and the second an investigation of a catheter specimen. After having obtained a bacteriological report on the latter, a careful clinical examination must be undertaken, including a rectal examination in the male, and a rectal and vaginal examination in the female. In the abdominal examination a search should be made for signs of bladder distension or tenderness, also for the presence of abdominal tumours, appendix lesions, prolapse, tenderness, or enlargement of the kidneys. If no explanation of the infection were obtained, an X ray examination must be made of the whole urinary tract for the presence of calculi; finally cystoscopy must be undertaken in order to obtain accurate knowledge of the condition of the bladder and ureters.

In discussing treatment, Mr. Dobson reviewed the urinary antiseptics in general use. Although urotropine occasionally gave excellent results, against these successes must be placed innumerable failures. The ideal compound would be one that was "chemically stable and relatively non-toxic and non-irritating. It should be antiseptic on high dilution in urine of any reaction, and should be eliminated unchanged in high percentage by the kidney" (E. G. Davis). Unfortunately no such drug was at present known. In discussing bladder lavage, Mr. Dobson regarded it of little avail as a prophylactic, but of use as a preliminary to the surgical treatment of enlarged prostate, stricture, tumour, calculus, &c., the action in such circumstances being probably largely mechanical. Renal lavage had become a popular remedy, but unfortunately it appeared that recurrence was by no means uncommon. It had been demonstrated that collargol when used for this purpose permeated the whole kidney and even appeared in the peri-renal fat. More information must be obtained on this subject before a definite opinion of any value could be given. Vaccines appeared to be of very little if any use in the treatment of urinary infections. In the opinion of the speaker the best advice that could be given in this connexion was the following: "If you must have a vaccine, have it prepared by a bacteriologist who is sceptical of the value of vaccine therapy."

Dr. PARKIN said that in no branch of his work was a general physician so dependent on the help of a specialist as in genito-urinary cases. For accurate diagnosis the aid of experts in the use of the cystoscope and ureteral catheter, and of a bacteriologist was essential. From an examination of the urine and from a consideration of the symptoms an opinion might be formed as to the site of the disease and of its nature, but without the help of the exact methods of examination employed by the genito-urinary surgeon a reliable diagnosis could not be made with certainty. As a matter of every-day practice cases were met with in which nephritis had been diagnosed because of the presence of albumin in the urine, but in which a more careful examination of the urine showed that the diagnosis was pyuria rather than albuminuria. For this reason a microscopic examination of the urine should be made in order to determine the presence of pus or of renal casts. There were certain cases of chronic nephritis that might easily be confused with surgical conditions of the bladder and kidney, owing to the occurrence of periodic attacks of hæmaturia. The absence of œdema and of albuminuria between the attacks of bleeding in these cases, which are of a granular kidney type, admitted little possibility of error. On the other hand, some acute cases of *Bacillus coli* pyelitis closely resembled acute nephritis, but a mistake would not be made if a careful examination of the urine had been undertaken, and pus cells discovered.

Dr. Parkin concluded by again pointing out the importance of supplementing a careful clinical examination by a bacteriological examination of the urine, and by a skilled investigation of the urinary tract.

The papers were discussed by Mr. A. FULLERTON (Belfast), Mr. J. SWIFT JOLY (London), Mr. KENNETH WALKER (London), Mr. A. N. FLETCHER (Brighton), Mr. F. K. SMITH (Aberdeen), Mr. ANGUS MACDONALD (North Shields), Mr. S. G. MACDONALD (London), Mr. THOMSON WALKER, and Mr. W. CLAY (Newcastle).

Mr. CLAY then introduced the subject of

Contusions of the Kidney.

As a result of having seen two fatalities following the adoption of the expectant treatment of renal injuries, Mr. Clay was in favour of exploration in all cases except those in which the trauma had been obviously of an extremely trivial character. When at the exploratory operation the kidney was found to be severely damaged, and yet doubt was felt as to the justification of immediate nephrectomy, the compromise could be adopted of retaining the organ on the surface. In such a position the kidney was under complete control and hæmorrhage could be satisfac torily dealt with should it occur. He had treated several cases by these means and had been satisfied.

Mr. MACDONALD discussed the treatment of bladder growths. The treatment of choice in cases of papilloma was diathermy applied through a cystoscope. Unfortunately such treatment had serious limitations; growths low down in relation with the internal meatus were mechanically impossible to reach, while some growths increased in size so rapidly that it was difficult to keep pace with them. Single papillomata in patients over 45 to 50 years of age should be subjected to operation rather than to diathermy, as it was impossible to tell with the cystoscope whether any given papilloma was malignant or benign. The only satisfactory treatment of carcinoma of the bladder was excision, but unfortunately about 50 per cent. of cases were inoperable before they reached the surgeon. For this reason special emphasis must be laid on the importance of early diagnosis and of cystoscopic examination in all cases of hæmaturia.

The PRESIDENT gave an account of the

Open Operation for Removal of the Prostate.

He pointed out that the complications that might be feared after prostatectomy were: (1) hæmorrhage; (2) post-operative infection; (3) post-operative obstruction. Many deaths ascribed to shock were in reality the result of hæmorrhage. In other cases, although hæmorrhage might not be entirely to blame, it contributed largely to a fatal result. Cases of obstruction following prostatectomy were by no means rare. The obstruction in such cases generally lay at the internal meatus where the bladder opened into the cavity left after removal of the prostate, and was due to the semilunar fold formed by the trigone muscle and the overlying mucous membrane. In order to avoid these complications and sequelæ, for several years he had practised the open operation, thus bringing the operation of prostatectomy into line with other modern surgical procedures. In order to obtain a good view of the bed from which the prostate had been removed, the patient should be placed in the Trendelenburg position and a special bladder retractor employed. Any strips and folds of mucous membrane left after enucleation of the prostate must be picked up with long forceps and clipped away. After trimming and removal of these folds a large oval opening was left at the vesico-prostatic orifice which fully exposed the interior of the prostatic cavity. The suggestion had been made that the mucous membrane at the internal meatus should be stitched to the urethral mucous membrane, but such a refinement was unnecessary even if it were practicable. What was necessary was to make certain that loose folds, tags, long shreds, and small detached gland nodules were not left hanging from the wall of the cavity to promote sepsis and encourage the formation of secondary stone by sloughing. The operation, as well as diminishing the amount of sepsis and the risk of post-operative obstruction, also allowed of the complete control of hæmorrhage, any spouting vessel being seized by means of forceps and tied. Two objections had been raised to the open operation—namely, the length of the incision and the increase in the time required for completion of the operation. However, these objections were not of great moment, for the operation could be completed within 20 minutes, and the risk of post-operative hernia was not increased by the larger incision.

In the afternoon a joint meeting was held with the Section of Radiology and Electro-therapeutics, at which large numbers of excellent skiagrams of calculi were exhibited. Dr. ROBERT KNOX, President of the Section of Radiology, gave an account of work done on the subject of biliary calculi, whilst Mr. THOMSON WALKER showed some excellent pyelograms and photographs of calculi of the urinary tract.

WALLASEY SANATORIUM COMMITTEE.—This committee, which has been in existence eight years, terminates its activities this year; its work is to be transferred to the Town Council. Over 400 cases have been dealt with during the period named, only 4 per cent. of cases coming from Wallasey village itself.

Reviews and Notices of Books.

EPIDEMIC RESPIRATORY DISEASE.

By EUGENE L. OPIE, FRANCIS G. BLAKE, JAMES C. SMALL, and THOMAS B. RIVERS. London: Henry Kimpton. 1921. Pp. 402. 36*s*.

THE sub-title of this book—The Pneumonias and Other Infections of the Respiratory Tract Accompanying Influenza and Measles—is really a better guide to its contents than is the actual title. The volume is the outcome of an exhaustive inquiry into epidemic respiratory disease occurring amongst American troops at Camp Funston (Kansas) and Camp Pike during the period covered by the late influenza pandemic. It does not pretend to give any information as to the pandemic as it occurred in other parts of the world or as to epidemic respiratory disease in general, and nearly all its references therefore are American; but as a record of lobar pneumonia, broncho-pneumonia, purulent bronchitis, &c., occurring in an army of healthy young adults under military training the book is of considerable value. Intensive studies of this kind make for accuracy, and we wish that there had been more opportunity for such work amongst the British armies in the field.

The masses of statistics and pathological and bacteriological records need no further précis than they receive in the excellent summaries at the end of each chapter. The book may be roughly divided into two parts, the one dealing with the influenza epidemic and its pulmonary complications, the other with measles and its complications. With regard to the former the authors conclude that Pfeiffer's bacillus is the "specific etiologic agent of epidemic influenza" and that it is always present in early uncomplicated cases, a point of view that is now gaining ground. An investigation of normal individuals showed a rapidly increasing prevalence of the bacillus simultaneously with the progress of the epidemic, raising thereby a consideration of the carrier condition which the authors believe is, in influenza, analogous to that found with other infections. They hold that if "*B. influenzæ* is to be regarded as the cause of influenza it must change quite rapidly under certain circumstances from a relatively saprophytic organism to a relatively virulent pathogenic organism, and conversely return to its avirulent state following the passage of an epidemic." Pneumonia following influenza presented a complicated picture; the bacteriological results with the "typing" of pneumococcal strains showed 12 per cent of types i. and ii., and 88 per cent. of the other types found in normal mouths (type ii. atypical, iii., and iv.). These results are remarkably similar to those obtained in Edinburgh by Dr. W. R. Logan, whose paper in the May number of the *Edinburgh Medical Journal* was recently reviewed in these columns, though we are not quite clear as to whether or no the identical methods of classification were used by the American author and Dr. Logan. The American authors also note that no definite evidence could be obtained that Pfeiffer's bacillus alone caused pneumonia. Here again the results agree with those of Dr. Logan. The hæmolytic streptococci were apparently rarely found in the Edinburgh inquiry, whereas in the American epidemic they were not uncommon. In America great difficulty was experienced in obviating secondary infections with this variety of organism, and the authors point out that absolute elimination of overcrowding in the wards, segregation of patients according to type of bacterial infection, and effective individual isolation are all essential measures in prevention.

The measles epidemic followed, and was therefore complicated by, the influenza epidemic. Altogether 867 cases of measles were observed, amongst which there were 56 cases of pneumonia and 48 of otitis media. Hæmolytic streptococci were rarely found during the pneumonia period, which occurred early in the epidemic, but were common during the otitis

period which followed. The authors noted that hæmolytic streptococci were widely disseminated amongst carriers, and point out the serious danger attending the treatment of measles.

In conclusion the authors see no reason for assuming that the late pandemic differed in essentials from that of 1890. The bronchial and pulmonary complications, though varied, were characteristic of the epidemic; the influenza bacillus was practically always present, pneumococci and streptococci being found as secondary organisms in the complications. Pneumonia following measles was almost coincident with that following influenza, and there seemed to be little doubt that the influenza epidemic played an important part in the production of pneumonia after measles.

A short appendix deals with a small series of experiments made on monkeys. Two animals into whose nose and pharynx *B. influenzæ* was introduced showed a "self-limited disease resembling many cases of influenza.".

A TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Fourth edition. By JOHN GLAISTER, M.D., D.P.H. Camb., F.R.S.E., Professor of Forensic Medicine and Public Health in the University of Glasgow. Edinburgh: E. and S. Livingstone. 1921. With 137 illustrations and one coloured plate. Pp. 918. £1 10*s*.

SIX years have passed since Prof. Glaister edited the third edition of his valuable work on medical jurisprudence, and with the help of a few judicious excisions he has managed to keep the added matter necessary for its re-issue within the limits of about 40 pages. The additions responsible for the increase in the present volume include fresh information relating to industrial and other poisonings, and to lunacy law and responsibility for crime, the case of Arthur Beard occupying six pages. Beard was the man who ravished a girl when he was drunk, and, in trying to smother her cries, killed her. The final appeal to the House of Lords, and the elaborate exposition of the relation of drunkenness to other forms of mental derangement, in connexion with the question of responsibility, will make Beard's case for long the authority in this particular branch of criminal jurisprudence. However, to anyone who studies the legal aspects of mental derangement in its various phases, there is as yet no assurance of finality in the decisions of the courts as to responsibility, nor any promise that Prof. Glaister will not have to include fresh cases of equal importance in his next edition. The prominence given to toxicology in its relation to medical jurisprudence on Prof. Glaister's title page, accompanied by the assignment to this subject of more than a quarter of the space at his disposal, is, of course, fully justified by the importance of the science of poisons in the regions where medicine and the law are brought in contact. It is no part of the medical man's duty to play the detective, except in so far as to do so is to safeguard the life or health of his patient, but in the matter of poisoning the detection of crime may of necessity go hand in hand with the diagnosis and treatment of illness. Suspicion may prove baseless on investigation; but that is no reason why suspicion should not enter the mind of the medical attendant, or be dismissed without inquiry.

In connexion with poisons, as with mental derangement, intoxication, and crime, new editions of text-books dealing with medical jurisprudence will continue to be necessary, and so complete and methodical a work as Prof. Glaister's will have to be kept up to date. It need hardly be said that his index is full and satisfactory, and that his footnotes supply references which will enable his readers to turn readily to the authorities upon which his text is based. His chapter on "Personal Identity" supplies a good deal of useful information, including an explanation of the processes and organisation connected with classification and identification by finger-prints. This is not strictly a medical subject, but is closely linked up with the study of identification by the medical man, who may at any time be called in where finger-prints fail to supply the necessary clue. The monstrous mis-identification of Adolf Beck in 1896, and again in 1904, with John Smith, convicted and imprisoned in 1877, would never have been allowed to pass unchallenged if a medical man had been assigned the duty of comparing the physical facts plainly observable in Beck with the recorded description of Smith. As it was, the police and the female victims of Smith, by perfectly honest mistakes, sent an innocent man in 1896 into penal servitude, and nearly succeeded in doing so again in 1904.

ARTIFICIAL LIGHT.

Its Influence upon Civilisation. By M. LUCKIESH, Director of Applied Science, Nela Research Laboratory, National Lamp Works of General Electric Company. University of London Press, Ltd. London: Hodder and Stoughton. 1921. Illustrated with photographs. Pp. 366. 12*s*. 6*d*.

ARTIFICIAL light is so inextricably interwoven with human activities and has exerted such a profound influence on human civilisation that we gladly welcome, from the pen of an American author and man of science, this readable volume, which is well adapted for the purposes both of the specialist and general reader. It sketches vividly, and with not too much detail, the progress of light and lighting from its infancy to its vigorous youth at the present time, dealing with the accelerated applications during the last two decades. The early chapters describe primitive artificial light—e.g., the art of making fire, and the ceremonial use of light. The real science of light production was born in the latter part of the eighteenth century, and consecutive chapters treat of oil lamps, early and modern gas lighting, electric arcs, and incandescent filament lamps. The next chapters concern the various economic influences of artificial light, and discuss lighting of streets and lighthouses, artificial lighting in warfare, and signalling. Photography, the means of modifying artificial light, the influence of light on health, and spectacular lighting all come in for mention. Finally, we have short chapters on the expressiveness of light, lighting of the home, and lighting as a fine art. With the discovery of fire early man obtained a power over darkness and the vicissitudes of climate, and thereby initiated one of the greatest strides along the highway of human progress. With the discovery of artificial light man's activities were no longer bounded by sunrise and sunset; enormous industrial developments followed the increase of working time.

The possibilities of artificial lighting seem infinite. Even when mankind was well conversant with the advantages of daylight, it took a decade and more of propaganda, not to speak of air-raids, to convince a conservative people that daylight saving was an economical proposition, the needs of the majority being considered. It is interesting to find that long before the late Mr. Willett launched his plea for dayling saving, Benjamin Franklin, in 1784, wrote and published in the *Journal* of Paris, a "serio-comic" essay on daylight saving.

JOURNALS.

Brain. Vol. XLIV., Part 1.—J. Boeke: The Innervation of Striped Muscle-Fibres and Langley's Receptive Substance. The paper contains the results of recent investigations on the mode of innervation of the striped muscle-fibres, the mode of ending on them, the manner in which the nerve endings are connected with the muscle-fibres, and the path by which the stimuli arriving by the nerves may reach the contractile substance of the muscle-fibre. The old conception of the tissues as being built up of cells, which are indivisible, self-propagating, independent organisms originating in a direct line from the dividing egg-cell must be abandoned. In place of it we find the cells

derived by division of the egg-cell at some period of development fusing to form a syncytium, from which the adult cells are later differentiated. The adult cells are thus independent of the old ones, and by this means the "individual dominates the elements which compose it," and harmony between the different tissue elements is achieved. This is found to be the case in the nervous system and the "neurone theory" requires revision. Further, the fibres of the neuroblasts do not run free in the interstices between the cells, but everywhere they follow distinct protoplasmatic paths, either of migrant medullary elements or of mesenchymatous cells, until they reach their destination. During the process of nerve regeneration, after a nerve has been cut, there exists, or is established, a perfect harmony between the elements of the different tissues which build up the path that has to be followed by the regenerating nerve-fibres. By means of special preparations it is shown that in both striped and unstriped muscle-fibres the nerve fibre axis-cylinder passes through the sarcolemma and ramifies in a layer of granular protoplasm which is collected in a small mass at the place of the nerve ending. In the sarcoplasm surrounding the neurofibrillar end-ramifications there is a reticular differentiation, extremely delicate, on one side attached to these ramifications, on the other side losing itself in the sarcoplasm. This Prof. Boeke proposes to call the "periterminal network." It is difficult to say whether it is to be regarded as a continuation of the neurofibrillar structure or as a differentiation of the sarcoplasm itself. The author does not hesitate to assert that it is of sarcoplasmic origin, but he considers that it develops only in connexion with and under the influence of the neurofibrillar structure of the nerve ending. After section of a motor nerve it rapidly disappears, and as soon as the regenerated fibres reach the muscle-fibre the periterminal network reappears. The author believes that it represents the "receptive substances" of Langley. With regard to sensory nerve endings, at least two different kinds of tactile end-organs exhibit the same feature. The corpuscles of Grandry in the skin covering the duck's bill consist of two large flat disc-like cells within a capsule, with the axis-cylinder terminating in a flattened expansion between the cells. In Bielschowsky preparations not only could the tactile disc be seen in a syncytial connexion with both cells, but inside the protoplasm of these cells there was visible a distinctly stained, sharply defined network in absolute continuous connexion with the neurofibrillæ of the tactile disc. Therefore there is reason for supposing that not only in the case of the motor endings but also in the different forms of the sensory nerve endings there exists in the first place a close connexion between the nerve endings and the surrounding "lemmoblastic" elements that gives us a right to speak of a syncytial arrangement; secondly, we may assume that everywhere between the neurofibrillæ of these nerve endings and the protoplasm is inserted a distinct reticulum, which seems to be the histological substratum for the receptive substance of the physiologists.

F. J. F. Barrington: The Relation of the Hind-Brain to Micturition. Having previously established that (1) there is a motor tone passing to the bladder through the pelvic nerves which arises in the central nervous system above the level of the lower thoracic region of the cord; (2) transection of the cord in the lower thoracic region abolishes reflex micturition—i.e., the reaction which ultimately occurs if a bladder is gradually artificially distended, leading to the expulsion of its contents; (3) transection of the cord in the lower thoracic region permanently abolishes micturition; the author endeavours firstly to determine the level in the central nervous system of the origin of the motor tone of the bladder muscle; secondly, to find out what parts of the central nervous system could be removed and micturition still take place; thirdly, to find what simple reflexes are combined together to form micturition. It was found that the tonic influence the central nervous system exercises on the bladder through the pelvic nerves arises at about the level of the middle of the pons. The conclusion appears to be justified that reflex micturition takes place normally in cats in the absence of the whole of the fore-brain and anterior part of the mid-brain. It is probable that removal of the cerebellum has no effect on reflex micturition. Experimental analysis of reflex micturition showed that active contraction of the bladder can be produced by distension of the organ to a given volume, by slightly moving the catheter in and out in the direction of the urethra, and, lastly, by distension of the posterior urethra. Two reflexes were found leading to relaxation of the urethra; they were evoked respectively by running water through the urethra and by distending the bladder. It appears that these five reflexes are of such a nature that when one starts the others are brought into action automatically. It is noted that five to ten minutes after decerebration passage of urine by a forcible stream very commonly occurs. This appears to be due to the removal of an inhibitary influence arising in the part of the brain removed.

Cecil Worster-Drought: Lesions of the Posterior Tibial Nerve. Lesions to this nerve are most frequently overlooked. The motor disability is relatively slight, the patient complains of pain or numbness in the foot; it is seen that he is able to plantar-flex the foot at the ankle and also to flex the toes. As a result, the condition is often termed "functional." This happened in many of the 64 cases which form the basis of the communication. Changes in cutaneous sensibility are found over the sole, at the margins of the foot, and over the posterior and lateral aspects of the heel. There is also paresis and often atrophy of the plantar muscles and interossei, the toes being hyper-extended at the metatarso-phalangeal joints and flexed at the inter-phalangeal joints. When the site of injury is above or involves the branches of the posterior tibial nerve supplying the flexor longus hallucis and flexor longus digitorum muscles, flexion of the toes is either much diminished or is entirely absent. The ankle-jerk is also reduced or impossible to elicit. The author advocates exploration of the nerve when sensory disturbances of long standing are the predominant feature.

The number also contains a summary of a paper on Tabes: Its Early Recognition and Treatment, by Dr. Farquhar Buzzard, in which he draws attention to the value of the recognition of the character of lightning pains, and a paper on the Effects Produced by Obscuring the Vision of Pigeons previously deprived of the Otic Labyrinth, by Mr. Sydney Scott, both being read before the Neurological Section of the Royal Society of Medicine.

The Journal of Industrial Welfare (Monthly. Price 9*d.*) continues to keep us posted with the way in which the welfare movement is advancing, notwithstanding the vicissitudes through which the world of industry has been, and still is, passing. This publication continues to improve and has now become well established. An excellent article, well illustrated, appeared in the March issue from the pen of Mr. W. B. Welch, of the Birmingham Small Arms Company; attention is drawn in it to works notice-boards, to the advantage of having an arranged scheme of notices, and to the need for making them attractive. From time to time matters of definite medical interest are discussed, as, for instance, when Major J. B. Malone in the May number described an excellent scheme put in force by the Portland Cement Manufacturers, Ltd. The essentials of the campaign are: (1) the education of the workman by propaganda; (2) coöperation between employees and management; (3) "safety first" committees in the works; (4) watching for hazards; and (5) encouraging suggestions. These essentials are pursued with encouraging results by the committees whose duties are (*a*) to encourage "safety-first" principles amongst the workers; (*b*) to report to the management likely hazards and methods for minimising them; (*c*) to report

if workers take unnecessary risks and if safety appliances are not used; and (*d*) to discuss accidents which occur, their causation and means of prevention. Signs are clear that welfare constantly needs coöperation with medical advice; this is well shown in the account given in the June number of a successful medical conference held at the London headquarters of the Industrial Welfare Society. The conference was attended by medical men engaged whole or part time by industrial concerns. Addresses given by Dr. R. M. Wilson and Prof. E. L. Collis are shortly reported; both speakers dwelt upon the importance of industrial hygiene and upon the value to industry of medical supervision. The conference appointed a small committee to consider the position and report to an adjourned meeting which is to take place in September at Balliol College, Oxford.

Journal of the Royal Army Medical Corps, July, 1921.—In this issue Sir William Leishman lifts a corner of the covering veil to tell how the enteric fevers were prevented in the late war. Typhoid fever had been a serious matter in South Africa, but preventive inoculation had diminished it, so inoculation, albeit voluntary, became a recognised service proceeding, and it was decided that, in the event of a mobilisation, inoculations would be more freely offered, vaccine would be sent to the depôts in quantity, and increased manufacture of vaccine would be at once begun. As it was planned so it happened; indeed better, for Lord Kitchener himself recommended inoculation to the soldiers in orders. Those who went overseas were ever better and better protected; 30 per cent. in the original expeditionary force, but 90 to 98 per cent. before long. Clinical differentiation of the enteric fevers is difficult, so these cases were all primarily classed as "enteric suspects," and later diagnosed by the laboratories, rigidly, as typhoid or paratyphoid A or B, the remainder were termed "enteric group." It soon became clear that inoculation was worth while. In 1915 the average British force in France was 643,000, the inoculated were 94 per cent.; they showed 0·94 cases per 1000 and 0·056 per 1000 deaths, the uninoculated 6 per cent. had 7·64 cases and 2·306 per 1000 deaths. In the first 16 months of the war the protected British had some 170 deaths, the French 11,690. The French later took to inoculation and became as immune as the British. Sir William Leishman ascribes escape from typhoid fever to (1) preventive inoculation; (2) field sanitation; (3) exclusion of carriers (in itself a laborious series of researches). Triple vaccine (T.A.B.) was introduced in February, 1916. The thorough laboratory work done on the "enteric suspects" made easier the early differentiation of the hitherto unknown trench fever.

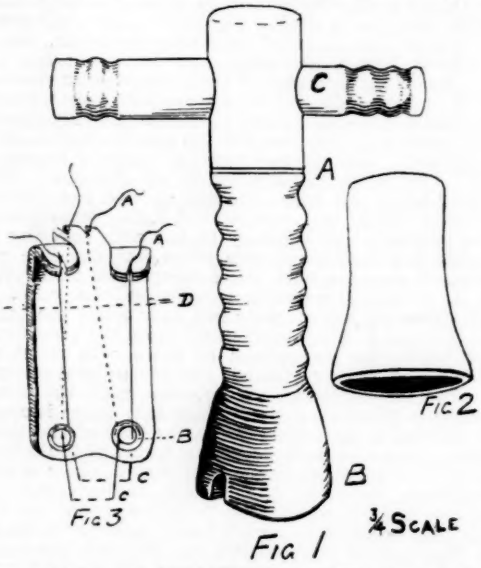
Colonel W. F. Tyndale, writing of the work of an A.D.M.S., shows that the greatest anxiety of a medical staff officer with an army in the field is the evacuation of wounded during an action, and he tells in illuminating detail how this may best be done. Dr. W. Wallace, in "The Vision of the Soldier," has some excellent and sympathetic remarks on the origin, prevention, and treatment of malingering. A labour unit was sending up many eyesight malingerers. One who had vision 6/60 only, was slowly induced to admit 6/6. "Do you know who I am?" said the ophthalmologist. "Some sort of medical officer," said the malingerer. "No," said the medical officer decisively, "I am a detective," and eye cases from that unit at once fell off.—Dr. Melville D. Mackenzie, assistant port medical officer of Liverpool, reports that sporadic typhus outbreaks in the front line in Mesopotamia were best dealt with by simultaneously delousing the whole infected party, and this by dropping kit and clothing into boiling water with a little alkali for 1½ minutes; all lice and eggs are killed. The method is quick, sure, and attainable. A question occurs to us. If a man's clothes are damaged by this procedure, has he any claim for compensation? His life has probably been saved. Disinfection has damaged, we suppose, his clothes. Without the disinfection his death would have precluded his using them.

London Panel Committee Gazette.—The last number of this circular for insurance practitioners in London gives a useful account of the Drug Fund and of the various changes which have taken place in the Regulations framed to control this fund. The rôle of the panel committees is clearly set out along with certain rules for their guidance, which are the result of considerable experience. Practitioners may well note the definition of excessive prescribing and the object of Article 34 of the Medical Benefit Regulations.

New Inventions.

IMPROVED DEVICES FOR BLADDER DRAINAGE AND CLOSURE.

THESE devices have proved to me very satisfactory. Fig. 1 is an improvement on the suprapubic drainage-tube previously described in THE LANCET (May 11th, 1918). The oval bulbous end, B, plugs the bladder wound and prevents leakage after a purse-string suture is applied above it. Leakage, however, is usually caused not only by not using such a device but on account of the bladder wall shrinking away from the parietes. Hence some surgeons sew the



edges of the wound of the parietes. The trumpet end holds the bladder up, but I wind the sutures C C, Fig 3 (about to be described), round the arms C of Fig. 1. If a rubber drain be preferred, the head is separated at A and driven into the rubber tube. Fig. 2 is an oval tube, which, if pushed into the bladder end of the rubber, will fulfil the same use as B, Fig. 1. Oval bladder tubes are best. Fig. 3 shows the little device to which I would draw particular attention. It is easily made in a few minutes. Its object is to close the bladder wound when this is no longer required, thus hastening convalescence and preventing fistula. C C show the sutures inserted on each side of the bladder wound; the ends of these, as before mentioned, are temporarily tied round the arms of Fig. 1. When this tube is removed these ends are crossed through holes B of Fig. 3 and brought into slots as shown. The edges of the bladder wound are thus closely brought together and heal before the super-imposed tissues. D shows skin surface.

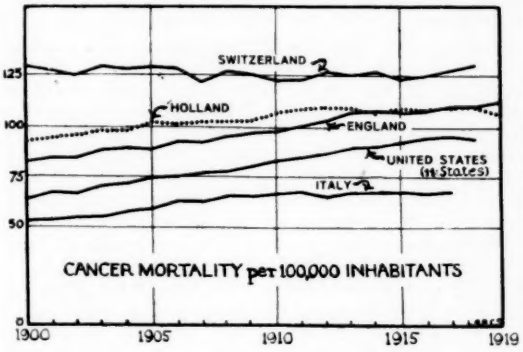
J. MACMUNN, M.R.C.S., M.R.C.P.I.
Finsbury-pavement, E.C.

THE LANCET.

LONDON: SATURDAY, AUGUST 13, 1921.

Cancer and the Public.

TUBERCULOSIS, as we pointed out last week, shows signs of being a moribund disease. Cancer, on the other hand, appears to be renewing its youth. The bills of mortality due to cancer have been rising



year by year in most countries of Europe since exact figures were available; the increase has been variously ascribed to more exact diagnosis, the introduction of tomatoes to the diet, and a lack of opportunity of dying of other diseases; but, explain it how we will, the sinister fact remains that each year more deaths from cancer in this country are recorded. We are glad therefore that Red Cross organisations are taking note of this fact and regarding it as a field for voluntary effort. The June *Bulletin* of the League of Red Cross Societies contains a striking article on the importance of early treatment in cancer, supplied by the League's department of medical information. Intensive work is going on in many parts of the world to seek out the essential cause or causes of cancer—much of this work has been recorded in our columns—but for the moment nothing has arrived of proved utility in preventing or curing the disease. At the same time, as the *Bulletin* justly indicates, the cure of cancer offered by the surgeon is more certain to-day than any cure which the phthisiologist has to offer to the tuberculous, for all his acquaintance with the bacillus of Koch; and it is suggested that the Red Cross societies of the world have a great field of service for their propaganda of knowledge among the peoples.

The *Bulletin* sets out nothing that is not well known to medical men and women, and even to the well read of all classes. But this is not enough when we recall that in 1919, to take an example, 4151 British women died of cancer of the womb, of the majority of whom it may be said with confidence that operation undertaken in the earliest stage of the disease would have ensured their recovery. Out of every 100 women who come to consult the doctor with this complaint, 60 are already in so serious a condition that no operation can be attempted; for 20 more an operation is attempted too late to stop the encroaching disease; 5 die as a result of operation which is serious in itself when left to the last moment, and only 15 are cured. The immediate solution of the problem may be expressed in one word—Educate. Here is work for Red Cross societies if they want it—namely, to teach the public that to wait until cancer causes pain is to wait for death. If a woman over 35 years of age suffers from irregular bleeding, especially after intercourse, she should at once consult a doctor. Some may shrink from doing this from motives of modesty, but there are now many medical women and there is a hospital staffed entirely by women doctors in South London. The *Bulletin* paints cruelly but truly the result of neglect of this earliest indication of serious disease.

Let us suppose that the early symptom is neglected; how then does the illness progress? A sudden severe loss of blood may occur and by alarming the patient may also save her life. Or there may gradually develop a constant discharge, at first watery, then more deeply stained with blood, finally evil-smelling, thick and yellow. The patient is beginning to lose weight and at any moment she may feel the first gnawing of pain—the pronouncement of a sentence from which there is seldom, if ever, a reprieve. The pain grows worse, the wasting becomes extreme, until the sufferer lies helpless in bed, too weak to move, nauseated by the evil stench from which her nostrils will never again be free, unable to eat or sleep, and racked by an incessant torture, until death comes as the only friend potent to release her.

It is truly a terrible picture; none who have witnessed it can ever forget it, but it is not an uncommon picture. Radium may do something sometimes, morphia may help a little at the end, but knowledge, if it is given to the people in time, can save these lives and all this suffering.

This is only an illustration; the same can, of course, be said in regard to cancer of the breast and other visible cancers. The medical profession knows all this too well. The crucial matter is to get the knowledge into the hands of the public. The American Society for the Control of Cancer has long been educating the American public in this way and has prepared a list of facts about cancer that might well be published broadcast.

1. Cancer begins as a small local growth which can often be safely and easily removed in the early stages by competent surgical treatment, or in certain favourable cases by radium, X ray, or other methods.

2. The beginning of cancer is usually painless; for this reason its onset is doubly insidious, and other danger signals must be looked for and heeded in time.

3. Cancer is not a constitutional or blood disease and there should be no thought of disgrace or hereditary taint associated with it.

4. Cancer is not a contagious disease and there is no danger from living in the same house or from contact with a patient.

5. In ordinary sense, cancer is not inherited. Some authorities believe that there may be inheritance of a certain tendency to the disease, but even this is not clearly established. The disease is so frequent that, by the very law of chance, many cases will occur in some families. Life insurance companies do not regard cancer in the family as a reason for rejecting applicants or increasing premiums.

6. A persistent lump in the breast, or continued abnormal discharge or bleeding should take a woman to her doctor forthwith. The increased flowing which frequently occurs at the change of life is always suspicious, as is the return of flowing after it has stopped.

7. Sores, cracks, lacerations, lumps and ulcers which do not heal, warts, moles or birthmarks which change colour or appearance are danger signs which demand competent medical investigation and treatment.

8. Persistent indigestion in middle life, with loss of weight and change of colour, may mean internal cancer.

This knowledge will save lives, and should be brought home to the public, for the plain facts about cancer are not generally known. Cancer theories and cancer cures have their fascination for the curious, but nothing can exceed the usefulness of making what is now known of cancer a commonplace in every household in the country.

Anoxæmia in Clinical Neurology.

IN an address given to the British Association in 1920, and published in THE LANCET in August of that year,[1] Dr. J. BARCROFT dealt with some of the medical aspects of oxygen-want, or anoxæmia. Its importance as a factor in the production of symptoms in disease is as yet but incompletely defined. This may be because we are not very familiar with its clinical manifestations, which, therefore, are not readily recognised. Dr. BARCROFT clearly indicated the circumstances in which we may expect anoxæmia to occur, and defined three types of the condition. These are (1) an anoxic type, due to low oxygen tension in the blood, such as occurs at high altitudes and when for any reason lung ventilation is imperfect; (2) an anæmic type dependent upon a deficiency of hæmoglobin in the circulation, as in anæmia, or in carbon monoxide poisoning when much of the hæmoglobin is not free to take up oxygen; and, finally, (3) a stagnant type, when, with a normal blood, the supply to the tissues is defective. However produced, the cells in these circumstances lack sufficient oxygen for their metabolic needs. Quite apart, therefore, from those special atmospheric conditions applying to aviators and miners, there must surely be a variety of common affections owing some part of their symptomatology to this physiological factor. What this part may be, how often present and how important, it remains for clinical investigation to tell us. Nowhere is its influence so clear as in the case of the nervous system, and it is with this aspect of the problem that Dr. F. M. R. WALSHE deals in an article on the Rôle of Anoxæmia in the Production of Symptoms in Disease and Injury of the Nervous System in the current number of *Medical Science*.[2] The results of experimental physiology indicate that the initial reaction of the central nervous system to minimal grades of oxygen-want is the development of a true hyper-excitability. Indeed, the extreme sensitiveness of the nerve cell and the synapse to oxygen deprivation has long been a commonplace of physiology. Though directed to other ends, numerous and diverse observations on the reactions of the spinal animal have attracted the attention of physiologists to this factor. KAYA and STARLING and MATHISON found that asphyxial states owe their effects mainly to anoxæmia and not to the carbon dioxide excess which accompanies it. Normally, spinal transection induces a state of shock in the divided cord which precludes all reflex activity, yet in slight asphyxia the acute "decapitate" cat may show apparently spontaneous scratch reflexes. Even after extensive posterior-root section motor discharges continue, indicating a true hyper-excitability of the spinal grey matter. A complex reflex response, comparable with the "mass reflex" described by HEAD and RIDDOCH in spinal man, may be obtained in the cat after shock has passed off, and its occurrence is of importance in the light it may throw on the origin of this phenomenon in man.

Of wider clinical interest are the psychical and neurological symptoms of cerebral anoxæmia. HALDANE has said that "anoxæmia not only stops the machine but wrecks the machinery," the machine in this case being the brain. However, BARCROFT produces evidence showing that acute anoxæmia of short duration probably leaves no residual defects of function or of structure behind it. The complete recoveries observed during the war in some cases of the superior longitudinal sinus syndrome of Holmes and Sargent, in which the motor cortex is asphyxiated severely for a period of hours, confirms this view. Nevertheless, though they are but transient and possibly of rare occurrence, such symptoms are not without significance to neurologists. They include impairment of the highest cerebral functions; defects of memory, of attention, and of judgment; marked emotional disturbances, such as pugnacity, extreme irritability, and the presence of fixed ideas. On the lower levels we see tremors, ataxy and weakness, increase of tendon jerks, muscular twitchings and spasms, and subjective and objective sensory disturbances. The symptom-complex of tetany may be readily produced in the normal subject by an artificially induced anoxæmia. Of chronic anoxæmia, as BARCROFT has pointed out, we know very little, and it is this form that we might expect to be of more frequent occurrence and of greater significance to clinicians. On the whole, the symptoms seem to resemble those of fatigue rather than those of irritation which characterise the acute forms. The whole question is clearly one of which there is urgent need of further knowledge. WALSHE emphasises the importance of quite another aspect of the problem. At the moment, phylogenetic and more particularly psychogenetic factors are being widely invoked to explain the genesis of disorders of the nervous system. Highly speculative theories of both orders abound and bid fair to eclipse a physiological method of approach to the problems of disordered function in the nervous system. Phylogenetic hypotheses are rarely capable of proof and as rarely find support in comparative anatomical or physiological studies. Further, it is urged that physiological factors must first be eliminated before we can justifiably seek a psychical origin for nervous diseases. Moreover, a sound knowledge of neuro-physiology should be regarded as an essential part of the equipment of the psychologist attacking any problem of clinical neurology. That this does not always obtain is seen from the frequent confusion of physiological and psychological categories seen in the writings of psychopathologists. In a recent book on this subject, a highly elaborate psychological theory is built up on the basis that skeletal muscle tone is innervated from the autonomic nervous system. Yet this is a postulate not accepted by physiologists and one with a great weight of direct evidence against it.

The wide range of psychical and somatic nervous disorders which may arise from a simple physiological factor, such as anoxæmia—and there are doubtless others as important—should therefore make us pause before we abandon lightheartedly the physiological method which has so brilliantly advanced our knowledge in the past and has been one of the proudest boasts of the English school of neurology, in favour of abstract and speculative psychological methods. It is only by the combined labours of trained workers in both fields, and not by the facile and exclusive adoption of any single method, however new and attractive, that progress will be made.

[1] J. Barcroft, Anoxæmia, THE LANCET, 1920, ii., 485.
[2] F. M. R. Walshe, Medical Science, 1921, iv., 427.

Mental Hygiene.

WE publish this week, in an abridged form, the important address delivered by Dr. C. HUBERT BOND before the Medico-Psychological Association at the recent annual meeting of that body. Dr. BOND is not only President of the Association, but a Commissioner of the Board of Control, and these facts might well have deterred him from independence or originality in his remarks: but, as will be seen, his double responsibilities produced the exactly opposite effect upon him. He spoke clearly, he spoke out, and was ready with a constructive policy, making no attempt to conceal shortcomings, but facing the truth that considerable reform is necessary in directions to which he makes specific reference. There is little if any support to be found in the address for the sensational views adopted by certain newspapers which delight to picture lunatic asylums as prisons, but there is no suggestion that the circumstances which surround the treatment of mental patients are ideal either for the patients or for the medical staff. Dr. BOND shows clearly that these circumstances are not calculated to promote the mental hygiene by which the beginnings of mental disease can be prevented and recoverable cases put in the way of recovery. And most thinking people will agree with him.

The subject is just now very much before the public. It is dealt with in some detail in the annual report, just received, of the Scottish Board of Control, where a series of recommendations may be found for setting up psychiatric clinics on the basis of 30 years' experience of observation wards in Glasgow. It should be borne in mind, say the Scottish Commissioners, that at the present time skilled advice and treatment of incipient insanity form the prerogative of persons sufficiently wealthy to afford it, and that the vast majority of the people can only receive treatment for insanity after the malady has become so confirmed that they can be certified and placed in asylums. We reviewed last week two books upon the administration of lunatic asylums, one written by Dr. MONTAGU LOMAX entitled "Experiences of an Asylum Doctor," and the other, "A Mental Hospital," by Dr. JOHN MACARTHUR, medical officer at Colney Hatch. There is no comparison between the two authors in the matter of experience; from Dr. MACARTHUR we get a detailed picture of the administrative side of mental medicine from one who is specialising in his subject; while from Dr. LOMAX we get a vivid sketch of the life that has to be lived by the inmates of mental hospitals, both patients and their curators, written as the result of a temporary if protracted charge. It will be allowed, however, that more than occasionally the man who is *in* a department but not *of* it, can take an all-round view of things as they are in a way which is not easy for those bred in the system. He can ask himself and others the why of happenings which normally pass unquestioned as matters of routine and tradition. Dr. LOMAX'S criticisms of the conduct of asylums, which in many cases amount to charges of inhumanity in administration—though this may have to be inferred rather than be the subject of categorical statement—are to receive official investigation. Sir ALFRED MOND has now promised in the House of Commons that the visiting committee of the asylum at which Dr. LOMAX was employed as locum tenens will be asked by the Board of Control for their observations upon Dr. LOMAX'S statements, with a view to possible action. We hope that there will be a prompt publication of the views of the Board of Control, for there is no factor more potent in keeping early and curable mental cases out of the reach of medical treatment than public distrust of asylum régime.

At the recent meeting of the British Medical Association, before the Section of Neurology and Psychiatry, Prof. G. M. ROBERTSON, superintendent of the Morningside Mental Hospital, read a most interesting paper on the diagnosis and treatment of borderland cases. He defined the borderland as where, on one side of a boundary, we have the region of the neuroses, consisting of disorders presenting such symptoms as spasm, paralysis, and sensory disturbances: and, on the other side of the boundary, the region of the psychoses, which included such disorders as mania, melancholia, and dementia præcox. He points out that between the two sets of conditions no hard-and-fast line can be drawn, the neuroses and psychoses passing gradually from one to the other. This is not a negligible strip of territory, but a stage whereon the most poignant dramas of human life are played, but, owing to public distrust, among other things, the actors receive no medical help, in too many cases, until obstinate conditions of mental ill-health have been developed. All of which brings us back to Dr. BOND'S wise pronouncement that mental health is no less important than ill-physique, and that the Report to the Ministry of Health of the Consultative Committees, English, Irish, and Welsh, on the physical health of the community, and how to preserve it, should form a broad model upon which we should strive to preserve the mental health of the people. The numerous barriers which prevent the intelligent treatment of in-patient mental cases should be relaxed, the position of uncertifiable cases requiring mental treatment should not be ignored, for, as Dr. ROBERTSON has shown, the uncertifiable pass into the certifiable, by which time they have become resistant to all treatment. Without the need for new legislation we can progress in the treatment of the out-patient cases; but several things are required. Broader vision from the medical profession and the public, so that they may see mental disease as a disorder logically dependent upon cause and effect, and often curable. Machinery whereby mental cases can be medically treated like sick people that they are. And money.

REGIONAL MEDICAL OFFICERS.

OF the 33 regional medical officers appointed by the Ministry of Health one has died, and the vacancy is not being filled. In making this statement in the House of Commons in reply to a question by Sir JOHN HARMOOD-BANNER, Sir A. MOND stated that these officers act as medical referees on questions of incapacity of insured persons for work referred to them by the Approved Societies, or raised direct by insured persons. In addition they act as consultants to insurance practitioners and generally assist in maintaining the efficiency of the insurance medical service. That should now be common knowledge, and we may hope that the spate of questions on the subject will soon dry up. From the side of the Approved Societies welcome recognition is coming in of the work of the regional medical officers. This appears in the recent annual report of the Prudential Approved Societies, and the societies as a whole are making more use of the new system which is working well. If the insurance practitioners on the other side coöperate with the regional officers it should result in a better understanding between the two main parties in the working of medical benefit, and the insured person will gain from the smooth working of the insurance service. This service may have to be extended shortly in regard to purely consultation cases, for the regional staff has been overworked through the increased number of references occasioned by the coal crisis.

Annotations.

"Ne quid nimis."

PROFESSIONAL SECRECY.

WE understand that certain of our readers have concluded from a sentence in a leading article which appeared in THE LANCET of July 23rd, that we urged the General Medical Council in the exercise of its powers with regard to infamous conduct in a professional respect to remove from the Register the name of any practitioner who gave evidence against a patient in a court of law, whether ordered to do so by the judge or not. We did not make any so direct recommendation, and the motive of a purely tentative suggestion has been misunderstood. In a brief reference to the discussion at the meeting of the British Medical Association, we wrote: "As it is, the lawyer and the priest are not protected by statute, but no one questions the lawyer as to what the prisoner has told him and *the priest would be punished for divulging. Possibly* the General Medical Council *might assist* by offering to remove from the official register the name of any practitioner who laid bare his patient's secrets on the invitation of a judge." This was intended to convey, and in our opinion was only calculated to convey, the suggestion that, at present, the often referred to case of the Roman Catholic priest offers no parallel to that of the medical man. If the former enjoys any special privilege or protection in the witness-box, as to which we are sceptical, it is due to the belief (1) that he has solemnly pledged himself not to reveal the secrets of the confessional; (2) that he would incur ecclesiastical penalties by so doing. We consequently suggested that as no such pledge or penalties exist for the doctor, his refusal to give evidence might "possibly" be strengthened by his being able to point to the danger that he would incur in giving it. We frankly agree with one correspondent that the High Court of Justice might resent such action on the part of the General Medical Council. The mention of what "possibly" might be done was, however, a suggestion only. It was made in accordance with the view developed in a leading article in THE LANCET of July 30th, that at some future date a test case calculated to arouse a strong combined protest by the medical profession, should call attention to the whole subject. Moreover, the suggestion, as another correspondent has pointed out to us, was made at the meeting of the British Medical Association.

THE INTERNATIONAL ASPECTS OF CHILD WELFARE WORK.

AN informal conference on the International Aspects of Child Welfare Work was called by the Friends' Relief Mission in Vienna on July 18th. The honorary president was Frau Marianne Hainisch, mother of the President of the Austrian Republic, Miss K. D. Courtney acting as chairman in the morning and Dr. Hilda Clark in the evening. Other speakers included Prof. von Pirquet, Miss Jane Addams, president of the Women's International League for Peace and Freedom, Dr. Poerner, and Dr. Horneck, as well as representatives of child welfare agencies in Switzerland, France, Austria, and Germany. The value of relief work in promoting international understanding was dwelt on by several speakers, Dr. Hilda Clark pointing out that, while international legislation was vitally important, the interest and goodwill of ordinary people, especially of those concerned with questions of family life, might have far-reaching effects in the economic welfare of nations. Miss Jane Addams advocated an international standard of child welfare below which no country should go, which would prevent children from starving in one country while abundant food was available in an adjacent one. Prof. von Pirquet, dealing with the incidence of tuberculosis in Vienna, said that, while it had been very prevalent before the war, the years of under-nourishment had given it a terrible impetus. It had been found that 90 per cent. of the children examined reacted to the cutaneous test, and as soon as symptoms of tuberculosis declared themselves in an individual it was necessary to take active steps to increase the powers of resistance. Prof. von Pirquet described the means taken to supplement the insufficient sanatorium accommodation in Austria. The roof of a hospital for tuberculous children had been adapted to take 100 patients, who thus spent their whole time in the fresh air, the beds being placed under a roof shelter. By this simple and inexpensive device the accommodation of the hospital had been doubled, and remarkably good results had been obtained. Dr. Poerner said that, whereas diseases of the digestive tract formerly accounted for the greatest number of infant deaths, general debility now ranked first as a cause of infant mortality, suggesting an embryonic weakness resulting from bad health conditions in the parents. The decrease in digestive disorders was mainly due to the fact that, owing to the scarcity of fresh milk, a far greater proportion of mothers nursed their babies than in pre-war days, in spite of their own under-nourishment. Pyæmia and skin diseases showed an increase as a cause of death, while a falling-off in nervous diseases might be accounted for by a reduced consumption of alcohol on the part of parents.

THE TEACHING OF OBSTETRICS AT LEEDS.

THE Leeds Maternity Hospital is one of the youngest and most useful of the Leeds charities. Founded in 1905 by the Leeds Ladies' Hospital and Maternity Fund, it began its work with 33 beds; in 1910 the hospital was transferred to the present buildings, which are well situated and not far from both the medical school of the University and the infirmary. There are now 70 beds, and material enlargement is needed. During 1920 the number of patients treated at the hospital was 1540; of these 1314 were cases of confinement, the balance being made up of cases attended elsewhere, in which complications had arisen as a direct result of labour. In addition to the work done within the walls of the hospital, there is an extern department in which, last year, the number of confinements was 1366. Five subsidiary homes are maintained in connexion with this extern department; the managers of the hospital have from the first recognised the importance of the teaching of midwives as a part of their work, and during the year 98 pupil midwives received training, 83 obtaining the certificate of the Central Midwives Board. In connexion with the training of nurses at the General Infirmary an arrangement has been made by the board of the infirmary for 20 of the infirmary nurses to receive three months' training at the Maternity Hospital, so that they may obtain the midwifery certificate. To carry this arrangement out the infirmary grants to specially selected nurses scholarships which cover fees and expenses during training. Nurses are also received for training from the Poor-law infirmary, from the West Riding Nursing Association, from the general infirmaries at Halifax and Nottingham, and from other institutions. The work is under the control of the members of the honorary staff, of which the Professor of Midwifery at the University is an ex-officio member.

The presence of this well-equipped hospital in Leeds has enabled some great improvements to be brought about in the instruction of students; prior to 1885 the latter had to rely on the private practitioners for their experience in practical midwifery, while a few went to special institutions such as the Rotunda. At the request of the board of the medical school an extern maternity department was instituted at the infirmary; after some years the desire for more systematic teaching in practical midwifery led to some few cases of special difficulty being admitted to the infirmary, and subsequently a very small intern

department was opened at the Hospital for Women, but not until the development of the Maternity Hospital was the present arrangement made possible. The University and the Maternity Hospital have entered into an agreement by which the hospital undertakes the whole of the practical teaching of the students in midwifery. This instruction is directed by a committee, which consists of the Dean of the Faculty of Medicine and the honorary staff of the hospital, including, of course, the Professor of Obstetrics. The University and the hospital combine in the election of a resident medical officer and obstetric tutor; the University regulations require that all students shall attend the intern work of the hospital for a period of one month before doing any duty in the extern department, and from the resident officer the students will receive their earliest practical instruction. It will soon become necessary to appoint a junior to assist in the work. It is very desirable that all students, during the time they are on intern duty, be provided with accommodation close to the hospital so that they may be summoned by telephone to see all cases of difficulty and of interest. Strenuous efforts are being made in this direction, and it is hoped that these will shortly prove successful.

PAYING POOR-LAW PATIENTS IN MANCHESTER.

THE result of conferences between the Manchester Board of Guardians and representatives of the medical profession has been agreement upon a scheme for the use, by paying patients, of beds in Poor-law hospitals. Amongst other provisions of the scheme, which is to be controlled by the medical superintendent of the hospital in which the beds are provided, are the following:—

The beds shall be available for cases sent in by any medical practitioner who shall be allowed, if he desires, to attend, treat, or operate on them himself, with the assistance of the resident medical and nursing staff of the hospital.

Patients shall be admitted to any of the beds with the recommendation of a medical practitioner, where possible, subject to the final approval of the medical superintendent of the hospital.

Any practitioner may, if he desires, attend and treat gratuitously any patient recommended for admission by him who can only afford the standard hospital fees for maintenance and treatment. Intention to do so must be stated at time of admission.

It is felt by the representatives of the Manchester Medical Committee that the arrangement may not only prove of great value to a number of patients, but will also provide an opportunity for general practitioners to participate in institutional treatment. The tariff of fees will be arranged by the local Medical Association.

COMPOSITION OF HUMAN FAT.

ALTHOUGH a good deal is known regarding the chemical composition of the fatty tissue of animals and its relation to the fats in the food, little work has been done on the constitution of human adipose deposit. It is agreed that the fats of infants have a higher melting point and contain less oleic acid than the fats of adults. In a recent article O. Schirmer[1] describes the results of his investigations to determine whether the state of nutrition and conditions of disease affect the composition of the fats of the human body. He examined the fat of the abdominal wall. It showed extraordinary variation in water content, from 5 to 71 per cent., so that there can be no question of anything like a mean water content of 29·9 per cent. as given by Vierordt. In fat persons the fatty tissue contains less water than the fat of lean individuals, so that there would appear to be a relation, hitherto unobserved, between the fat and water metabolism of the body. From his observations the author concludes that in certain cases of disease very large amounts of fat in adipose tissue are replaced by water, and in this condition the absorptive connective tissue plays an important part, especially as the test tissue which contained most water showed the largest amount of connective tissue. In the fats themselves the consistence diminishes with increase in the iodine number. Fats with a high iodine number—about 70—are fluid at room temperature. On standing there is formed gradually a solid deposit consisting of tripalmitin. In fat individuals the iodine index rises very considerably and the fat is much more fluid than in spare individuals. The amount of cholesterol is much higher in fats with a low iodine number. A normal iodine number in a person of normal nutrition may be taken as 65 to 66·5, corresponding to an olein content of 59 per cent. In very fat persons the corresponding iodine number lies in the region of 70. Tables are given to show the influence of diseases and constitution on the quantity and composition of the fats, but no simple rules can be deduced from them. Nephritis, diabetes, and castration seem to lessen the iodine number. Experiments on rabbits and ducks were undertaken to study the effects of food fats on the body fats. The composition of the fats given in the food modified the composition of the body fats, even when the food contained no excessive amount of fat. The administration of oil increased the iodine number, while tallow diminished it. Human fat with an iodine number of 69 melts at 16° to 20° C., and rabbit fat with the same iodine index at 40° C.

[1] Arch. f. Exp. Pathol. u. Pharmakol., vol. lxxxix., 1921.

A MODEL VILLAGE IN U.S.A.

THE first annual report on the health department of the model village which the United States Public Health Service has been developing for nearly two years on the 516-acre Government reservation at Perryville, Maryland, contains some interesting information. The reservation was used during the war as a site for a large nitrate plant; the buildings included 200 cottages, two general stores, a model school house, club, firehouse, and theatre for the workpeople, and the whole property was handed over by Congress for use as a hospital site and for storage of the medical supplies of the Public Health Service. The Public Health Service promptly transformed a group of cottages into one hospital and set out to build another; the two together now accommodate 430 patients. Not including the variable hospital contingent, the reservation now has a population of 839 persons, the sexes being, roughly, equally represented. The birth-rate on the reservation was 39·33 per 1000, as against 24·39 in the whole State and 28·78 in the county. The death-rate was only 3·67, an excess of children being roughly balanced by the small number of aged persons. While this low death-rate is partly due to the favourable age constitution of the population, much of the credit is laid at the door of the efficient health administration. Careful work has kept down the figures of cases of communicable disease, particularly diphtheria, of which 30 cases occurred during the year in the county and three on the reservation; one of these last was a new-comer, one a young sister of a boy who was found to be a carrier, and one an adult. The low prevalence of contagious disease is ascribed directly to close watch and prompt isolation, laboratory diagnosis, and prophylaxis, and indirectly to pasteurised milk, filtered and chlorinated water, school medical supervision, and good living conditions, including sewers, screens, and covered garbage cans. A physical examination of the children showed that 93·5 per cent. had physical defects of teeth, tonsils, adenoids, eyes, or hearing, this large percentage probably being due to the lack of facilities for remedial correction nearer than Baltimore. Similar percentages are found in the county outside the reservation. Many of these defects have recently been corrected. Between Nov., 1919, and Nov., 1920, the percentage of underweight children was reduced from 42·7 to 13·8. The drinking water is drawn from the Susquehanna River, and is, unluckily, in bad condition, being contaminated in several highly variable ways. The geological formation of the country, the daily conflict of the tide and the river current, and the strong winds on

the low flats—all necessitate careful consideration. For use on the reservation the water is pumped to settling tanks, where the suspended matter is first precipitated by coagulation with aluminum sulphate, after which the water is passed through sand filters. This purification is further supplemented by disinfecting the water with liquid chlorine. Mosquitoes, it is noted, have been practically exterminated by the usual methods. The reservation offers many facilities for research work, particularly in various phases of sanitary engineering. Its position is suitable for the establishment of a school for the teaching of public health administration.

THE FUTURE OF RED CROSS CLINICS.

SCATTERED over the country are a number of clinics founded by the Red Cross for the treatment of the wounded. Now that pensioners under treatment are happily becoming fewer, a movement is being made to retain the services of these clinics for civilian patients. Physical therapy in the treatment of injury and disease is becoming more and more widely recognised, and there are comparatively few large city hospitals where a department devoted to this treatment cannot be found. But the expense of securing this treatment in private is considerable, and a large section of the community is rightly unwilling to attend hospital for treatment, and yet cannot afford to pay for it to be administered privately or in their own homes. For these the proposed transfer of the Red Cross clinics to civilian work will be an incalculable boon, and may well be carried through provided sundry safeguards are observed. We may classify these briefly as affecting the medical men of the district, the patient, and the practising masseur. Little opposition will arise from medical men provided that patients are admitted to the clinics only on the recommendation of a qualified medical practitioner. This would protect the clinic from the patient who casually drops in for treatment without the knowledge or consent of his doctor. Patients must be safeguarded by placing the clinic under the care of a medical man specially qualified to prescribe details of treatment, and able to supervise and control everything that is done on their behalf. The interests of the practising masseur should be safeguarded by ensuring that only patients who are unable to pay the fees for private treatment usual in the district are received as patients of the clinic. This would entail the employment of an almoner or some other person suitably skilled in social service work. Should the clinics be run in any sense as competitors with the private masseur, great hardship would be inflicted. Granted these safeguards, we welcome the proposed transfer.

TUMOURS OF THE BONY CHEST WALL.

ACCORDING to Dr. C. A. Hedblom,[1] of the Mayo Clinic, tumours of the bony chest wall are comparatively rare. He has collected 213 cases, including 48 from the Mayo Clinic, 23 of which came to operation, and 25 in which operation was not performed. In 167, or 78·7 per cent. of the 213 cases, the tumours were of the ribs, and 46, or 21·3 per cent., were of the sternum. 61·4 per cent. were sarcoma, and 18 per cent. were chondroma, the ribs being primarily involved in 78·7 per cent., the sternum in 21·3 per cent. Of the Mayo Clinic cases, 2 were examples of recurrent carcinoma following amputation of the breast in the female, in 2 the primary growth was in the male breast, 1 was a hypernephroma secondary to a tumour of the kidney on the same side, and 1 was secondary to a cancer of the thyroid. Although there is usually no history of trauma in tumours of the chest wall, the absence of such a history is no proof that the origin of the tumour was not traumatic. Minor injuries, as Dr. Hedblom points out, are as a rule quickly forgotten. Moreover, chest tumours are commoner in males who are more liable to injury, and the area involved is usually the more exposed anterior and lateral portion of the chest. It is probable therefore that in some cases at least trauma plays a part in the ætiology both with regard to incidence and the malignant degeneration of the benign forms. Apart from the presence of a tumour, pain, which may be present before there is any discernible growth, is the most characteristic symptom both in benign and malignant tumours, being present in 50 per cent. of the 213 cases. Loss of weight was noted in 15, or 31·2 per cent., dyspnœa was present in only 4 cases, and effusion in 2. In typical well advanced cases the diagnosis of neoplasm is certain, but in early cases a diagnosis may be impossible. Cold abscess, exostosis, gumma, aneurysm, and dermoid cyst must be differentiated. Early radical extirpation, which was performed in 10 of the 48 Mayo Clinic cases, is the treatment of choice, while late radical or palliative extirpation, which was performed in 13 of those cases, may result in a relatively long period of freedom from recurrence even in the presence of extensive involvement. The contra-indications to operation are metastases, very extensive involvement, periostitis, and advanced cachexia. Intratracheal or intrapharyngeal insufflation anæsthesia affords an effective means of preventing operative pneumothorax. Shock, pneumonia, and empyema are the commonest causes of death following operation.

[1] Archives of Surgery, July, 1921.

STOCK ALLEGATIONS AGAINST INSURANCE DOCTORS.

AT the recent delegates' meeting of the High Court of the Ancient Order of Foresters, held at Leeds, serious charges were made against panel doctors. In the words of the High Chief Ranger, as they appear in the daily press:—

> 1. Panel doctors frequently issue certificates without seeing the insured person.
> 2. There is a marked tendency ..... to refer patients for hospital treatment as out-patients, as the panel doctor gets his capitation fee whether the man is well or ill. The net result is that the doctor draws the money while the hospital does the work.
> 3. In some cases panel doctors show a reluctance to call on patients outside surgery hours.
> 4. In order to retain their panel at present strength "a few" panel doctors are chary about offending possible malingerers by giving them too hasty clearing-off notices, fearing that the patients might change their panel.

Items 1 and 4 refer to breaches of the certification rules and the Order of Foresters has only itself to blame if the doctors guilty of such unprofessional conduct are not brought before the proper tribunal. Lax certification is dealt with very severely by the Minister of Health when cases are brought to his notice by medical service subcommittees, and the General Medical Council has warned the profession that such conduct will incur grave penalties. In regard to item 2 the practice of referring cases to hospital out-patient departments is necessary under the present system owing to the fact that in no other way can a second opinion be obtained for an insured person. That hospitals are not paid for the services they render to insured persons is not the fault of the insurance practitioners, who hope that the omission will be rectified in the near future. The reluctance suggested in item 3 would render doctors liable to a charge of negligence, also a matter readily dealt with by the medical service subcommittee. It seems to us that there is little or no substance in these and similar complaints, for, as Sir A. Mond pointed out in the House of Commons last week in reply to Mr. Haydn Jones, machinery is provided under the Insurance Act regulations for investigating complaints and imposing penalties where such complaints are substantiated. But the Minister added that he was considering whether the time had not come for an inquiry into the working of the Acts as regards both cash and medical benefits.

LUNACY AND DIVORCE.

IN the House of Commons recently Mr. Rendall, M.P., asked a question of the Home Secretary as to the number of married persons in lunatic asylums in England and Wales; as to how many of these had been certified for more than five years: and as to the intention of the Government with regard to the recommendation of the Royal Commission, that certified insanity of five years' duration should be a ground for divorce. The figures apparently were not available, and it was intimated that no measure of the kind suggested could be added at present to the programme of legislation. They would be interesting figures if they should be obtained, as they would show roughly how many persons could possibly be affected by the facility for divorce proposed. They would not show with anything like accuracy how many divorces would follow the innovation, for there would certainly be a considerable proportion of men and women who would not avail themselves of it. Such figures, when compiled, should be amplified by particulars as to the respective numbers of the cases in question in which insanity has been established for 10, 15, 20, or more years. In the event of divorce on the ground of insanity being made possible at some future date, it would also, no doubt, be provided only for cases where the patient, according to the best medical opinion obtainable, is incapable either of recovery or of appreciation of the step taken. We do not propose to discuss a question into which personal convictions and personal religious belief enter largely, but we would point out that sympathy for this and other classes of cases of great and admitted hardship has undoubtedly increased in the last few years. This has been largely due to the obvious fact that the existing law is not confined in its action to the cases of cruelty, desertion, and adultery for which it was intended, but is taken advantage of to secure the annulment of many marriages by processes which savour strongly of mutual agreement and collusion. It is naturally argued that if young people who have little or nothing worse than boredom to complain of in their married lives can obtain relief without encountering any serious social disapproval, it is unjust that sufferers whose lives are wrecked without hope of recovery should have no remedy. It may be argued that in many, if not all, cases, the insane person will have done nothing for which he can be blamed. This must be admitted, but, on the other hand, as suggested above, divorce might well be confined to cases where it inflicted no penalty.

THE second report of the Welsh Consultative Council, which appears this week, recommends the establishment of a Welsh National Council of Health to provide for the development and organisation of health services and institutions in the Principality.

THE Common Council of the City of London recently voted in favour of an increase of salary from £1500 to £2000 per annum for their medical officer of health, Dr. W. J. Howarth, C.B.E. It was, however, pointed out by the town clerk that the resolution had been carried by 84 votes to 64, and that under a standing order of the Corporation a two-thirds majority was necessary in such cases before the increase could be made. Dr. Howarth will, we hope with certainty, find the Common Council willing to renew its consideration of the matter at some future date; we are assuming the validity of the by-law, or the interpretation put upon it by the town clerk, as points which must have been duly considered.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C.2.

WATER-SUPPLY:
CONSIDERATIONS ARISING OUT OF THE DROUGHT.

(BY A SPECIAL CORRESPONDENT.)

OWING to the drought, the time seems opportune for dealing briefly with current events and opinions as regards water-supply. The war and its aftermath, and the experience gained during the drought, have taught us many lessons, and we are face to face to-day with an economic position of considerable gravity. It is easy to say "hands off" as regards water-supply and public health questions generally, but it is none the less true that poverty and misery are the forerunners of disease. Beyond question it is our bounden duty to apply fresh knowledge and new experiences to the problems of preventive medicine, and see if money cannot be saved without prejudice to health.

The severity of the drought, now partially broken, is common knowledge, but the following table usefully summarises a few of the salient meteorological features of the last six months:—

Camden-square, London. (British Rainfall Organisation.)

—	Mean temp. degrees F.		Rainfall in inches.		Duration of sunshine in hours.	
	1921.	Av. 1860–1919.	1921.	Av. 1881–1915.	1921.	1920.
February ..	40·7	39·9	0·18	1·67	46·8	32·7
March ..	46·8	42·2	1·19	1·83	113·8	107·3
April	49·5	48·0	1·29	1·54	191·7	73·1
May	57·0	54·5	1·03	1·76	227·6	186·8
June	61·8	60·2	0·37	2·02	221·7	180·2
July	69·4	63·4	0·13	2·38	253·9	130·7

Official Call for Information.

An interesting step has recently been taken by the Ministry of Health. Waterworks authorities throughout the country have been circularised, and certain particulars asked for. For example: (1) the average yield per 24 hours for the year 1920; (2) the minimum yield per 24 hours during 1920; (3) the minimum yield per 24 hours resulting from the present drought. As, in some instances, the flow will continue to decrease despite the advent of rain, measurements should be continued until the point of minimum flow has been satisfactorily established. There can be no question that the information obtained will greatly assist the future development of water-supplies throughout the country, as we have now a unique opportunity of gauging the yield of water under unprecedented conditions.

It may, however, be suggested that the present time is favourable for securing a large amount of other useful information. For example, it is extremely important to know how the *quality* of our water-supplies has stood the test of the prolonged drought and the remarkable meteorological conditions which have accompanied it, and how far the floods, which must follow, will affect the position. Sanitary and waterworks authorities and medical officers of health are, no doubt, alive to the fact that the present conditions of water-supply are, apart from questions of deficiency, intensely interesting from the point of view of *quality*, and that the advent of rain will not rob the subject of its importance. Indeed, in many instances, when the fear of scarcity has disappeared, questions of purity will immediately arise. For example, what kind of water is going to be impounded, in unprecedented amount, into heavily depleted reservoirs, and are all wells, the output of which has been in most cases steadily diminishing, going necessarily to yield, in due course, exactly the same quality of water as characterised the past?

It is to be hoped that the opportunity has been, is being, and will be seized to collect information of

the chemical, bacteriological, and physical qualities of river, well, and reservoir water under remarkable conditions.

Questions of Quality often Ignored: the Example of Toronto.

It is to be regretted that there still remains the tendency to accumulate waterworks statistics without proper consideration being given to the circumstances which govern the safety and potability of the supplies in question, for these are of high value from a comparative point of view. Not long since (1914) an important Blue-book (Return as to Water Supplies—England and Wales) became available for reference. Despite its great use, it is matter for regret that all *detailed* references to the chemical and bacteriological composition of the supplies dealt with are practically ignored. Beyond doubt the returns are filed away and are theoretically still available for inspection, but for the time being, at all events, the facts are buried. Is it too late to plead for their resuscitation, and for an authoritative account of how far the abnormal conditions of drought have influenced our water-supplies throughout the country from a *quality* standpoint?

In 1919 a paper on Water and Sewage Purification appeared in Reports of the Progress of Applied Chemistry, Vol. IV. In dealing with the valuable work carried out at the Toronto water laboratories, the following observations were made, which are worthy of repetition here, as showing the importance of accumulating accurate data throughout the country as to the qualities of our water-supplies and the need for scientific investigation:—

"Toronto is splendidly equipped for carrying out important water investigations. A very large number of samples are examined and many valuable researches carried out on water purification, and one can only compare the scale of their operations to that of the Metropolitan Water Board, which have always interpreted Section 25 of the Metropolis Water Act (1902) in the most liberal and imperial spirit, as if indeed their responsibility to humanity was of general and not merely of local significance. Can quite the same be said of all our large water undertakings throughout the United Kingdom? It is to be feared that this cannot be said, but the fault is not to be found with the medical officers of health, analysts, chemists, and bacteriologists concerned, but rather with waterworks authorities who, too often, are content with the little rather than the more, and who do not always recognise that applied science has infinite possibilities, not only as regards safeguarding health, but in respect of saving unnecessary expenditure, and that these matters should be looked upon in a national and not a parochial spirit. It is true, however, that in very many cases the water-supply is so pure that numerous analyses and comprehensive investigations may seem to be uncalled for, and, no doubt, this has influenced waterworks policy in the past. Nevertheless, a great deal can be learnt from the study of even pure water, and there can be but few waterworks which possess no problems awaiting solution by the trained observer."

The Present Need for Strict Economy.

Not within the memory of most, if any, of us, apart from the disquieting remembrances aroused by the Worthing (1893), Maidstone (1897), and Lincoln (1905) epidemics, has the question of water-supply aroused so much interest as in the present year. As a counsel of perfection it is well to plead for supplies unimpeachable at their source and abundant in quantity. But we must be prepared to consider, if not accept, compromises, or to embrace new ideas, or perhaps even to condone temporary expedients, not because we have recklessly abandoned our old principles, but in view of the fact that this time, of all times, is the opportunity for searching diligently, in relation to questions of water-supply, for avenues leading to economy. In matters of this kind it would be a grave mistake to create a false impression. It is not hinted that it is permissible to gamble on the real safety of our water-supplies, but it is suggested that the lessons of the war and its aftermath, and the circumstances arising out of the drought, and increased knowledge generally, have taught us many new things operating in the direction of economy.

Economical considerations have within recent years influenced waterworks procedure.

In 1915 Aberdeen received the assent of Parliament to a scheme for purifying the River Dee for waterworks purposes by (1) excess-liming, (2) short storage, and (3) rapid filtration, the saving in capital cost on alternative schemes exceeding £100,000. The way towards this event was paved by the discovery that caustic lime present in water, in even the smallest excess, exercised a strong bactericidal action.

In 1916 the Metropolitan Water Board decided to save coal by chlorinating raw Thames River water (70-80 million gallons a day) and allowing the treated water to flow by gravity down the Staines aqueduct, instead of first pumping it up into Staines Reservoirs. The difference, for the year ended March 31st, 1921, between the cost of pumping and the cost of chlorinating represented a saving of over £19,000. The New River supply of the Metropolitan Water Board is made up of a variable mixture of New River water (Upper Lea water) and pure well water. During the greater part of the year, owing to the good quality of the well water and the relatively satisfactory state of the river water, the filtered water results are remarkably good, as judged by the ordinary chemical and bacteriological standards, despite the fact that the rate of filtration at the New River works is considerably in excess of that practised at the other works of the Board. During winter floods the river water deteriorates so much that the excellent quality of the well water fails to "mask" the deterioration of the mixed filtered water product. The storage reservoirs at Hornsey and Stoke Newington are far too small to affect the position materially. In 1916 the Metropolitan Water Board started investigations with the object of seeing whether it might not be possible to remedy this state of affairs by chlorination. It is obvious that to increase materially the filtration area, or to provide adequate storage accommodation, would mean an immense capital outlay in order to improve matters during these transitory periods of deterioration.

The experiments have been most satisfactory in a bacteriological sense, and preliminary difficulties as regards taste have been overcome by the use of permanganate and carefully graded doses of chlorine according to the current quality of the water.

In 1917 Rotherham decided on the policy of re-using the abandoned and severely censured Ulley gathering ground, and, subject to the approval of the Local Government Board, to supply from this source water rendered safe by sterilisation processes. Somewhat later Cardiff determined to adopt a similar course in regard to a portion of their gathering ground, which had been provisionally given up as not wholly satisfactory for waterworks purposes.

In 1917 Accra was faced with a very unsatisfactory position as regards its water-supply. The water (swamp water, liable to pollution) deteriorated to a remarkable extent in the relatively large storage reservoirs, absolutely necessary for purposes of quantity. Exhaustive experiments were made, and it was found that by applying the "excess lime" method of treatment the water was freed from excremental bacteria—e.g., *B. coli*—and remained clear, odourless, and free from growths under conditions of storage. The saving on alternative purification works represented a large sum of money. This is the first occasion on which the excess-lime method has been used for the express double purpose of destroying "plankton" development and rendering water safe from the epidemiological point of view.

In 1919 Sheffield conceived a scheme for the utilisation of river water as compensation water, which, despite its bold and unprecedented character, received, with certain reservations, the assent of Parliament. It is of interest to consider this unique proposal at more length, because its influence on future procedures may be far-reaching. Sheffield was obliged by Act of Parliament to pass about 10 million gallons daily of pure moorland water from the Dam-Flask and Rivelin reservoirs down the course of the grossly polluted River Don (which, of course, was not used for drinking purposes) as compensation water. The proposal was to reserve this pure water to increase the domestic supply to Sheffield, and to abstract from the Don below the point where the sewage effluent from the city, together with many other impurities, entered the river an approximately similar amount of water, to purify and soften it, and to pump the purified river water back about eleven miles up-stream and pass it through the statutory mill gauge in lieu of the unnecessarily pure water discharged from the reservoirs for compensation purposes. The word "unnecessarily" in this connexion is used advisedly, for the River Don water was only used for trade purposes and was so heavily polluted with ochre streams, trade effluents, and waste liquors near and below the point of discharge of the compensation water that to "feed" it with water of a high degree of purity was a wasteful procedure. Sheffield considered that if they purified and softened the river water abstracted below Sheffield to a standard at least equal to that proposed by the Royal Commission on Sewage Disposal, and softened it as well, they were in no

way injuring trade interests, destroying the amenities of the district, or endangering health. Indeed, by utilising a pure moorland water for augmenting the domestic supply of Sheffield, they were greatly contributing to the prosperity and welfare of that important city, and conserving the water and financial resources of the country, inasmuch as any alternative project for providing an equal quantity of potable water would have involved the ratepayers in a capital outlay of approximately £3,000,000, compared with £350,000. The proposed method of purification was by lime and soda treatment, followed by efficient filtration.

Parliament endorsed the wise proposals of Sheffield on all points of principle, but imposed certain reservations. The Report of the Select Committee on Local Legislation which considered the Sheffield Bill stated :—

"The Sheffield Corporation Bill contained entirely novel proposals with regard to water-supply. The Corporation were allowed, after full evidence being given, to substitute for compensation water, which they are now under statutory obligation to discharge into certain rivers, an effluent from their sewage works purified to a standard required by the Bill, and which standard is based to a considerable extent on the findings of a Royal Commission of some years ago. The urgent need for, and difficulty in obtaining, a further supply of water for domestic purposes, combined with the special circumstances affecting Sheffield, make this case suitable for testing an experiment, which, if as successful as the evidence suggested, would be of incalculable advantage in other cases, where suitable conditions exist for its application."

Compensation Water: Standard Rate of Consumption and Avoidance of Waste.

A striking instance of present-day tendencies to economy in water-supply is the challenge of the necessity for providing one-third of the supply as compensation water, irrespective of the real circumstances. This is a subject which must be thrashed out in the interests of the general community; it is not a matter to be governed solely by precedent.

The drought has taught us that sooner or later, but the sooner the better, some tangible conclusions should be reached as to what is a reasonable rate of consumption per head of the population. No doubt, the circumstances vary considerably in different places, but, excluding trade interests, some figure for domestic purposes should be arrived at which is economically satisfactory without departing from the needs of decency, good sanitation, or reasonable enjoyment. The standard, whatever it may be, should never be exceeded, unless the circumstances clearly indicate that there is no financial reason why a more generous supply should not be afforded. The manner in which people generally have recently economised in the use of water has been little short of amazing, but it is still more remarkable how much less water than has been actually employed is really necessary in the interests of health.

It is not contended that a householder should of necessity in the future elect to have a supplementary rainwater supply, use his "slop" water for garden manurial purposes, his "washing" water for the watering of plants, reduce his personal ablutions to a minimum, and never use clean water for flushing operations. Nevertheless, if the householder has no leaking taps and adopts altruistic principles in relation to public water-supplies, it is an incontestable fact that, without infringing on the calls of health, or suffering any sensible hardship, a considerable saving in water consumption can be secured. It needs to be remembered that a decreased consumption of water implies correction for increase of population, and therefore postpones fresh capital expenditure, or a rise in working expenses; alternatively, when a population is stationary it usually connotes an economic gain, or an additional security, for the reason that whatever purification processes are in vogue the working expenses are either reduced, or the plant can be worked to yield the most efficient results. Indeed, it might be urged on the highest plane of all that as decreased consumption means, or should mean, a purer water, every effort should be taken to secure economy in the use of water in order to safeguard the interests of health. These matters are of special importance in the case of double-pumping schemes, and in connexion with water-supplies which require carefully contrived methods of water purification.

The Cheapness of Water.

A pure and abundant water-supply is amazingly cheap, and our outlay on public health is a mere drop in the ocean of the calls made on our purse to-day; but the fact remains that however desperately we resent other and vastly more costly expenditure on other projects, our duty to the nation to economise *in all possible directions* remains unaltered. Equally frankly it should be emphasised that the proportion of the total cost of a water-supply which can be fairly attributed to purification processes is, in most cases, singularly small.

There appears to be no evidence that the health of the community has suffered in any way as a result of the prolonged drought.

FACTORY HYGIENE IN 1920.

REPORT OF THE CHIEF INSPECTOR OF FACTORIES AND WORKSHOPS.

WE commented briefly last week on the medical aspects of the report[1] of Mr. R. E. Graves, H.M. Chief Inspector of Factories, printed in handy and convenient form similar to the publications of the Ministry of Health.

Danger in Industry.

The question of safety is dealt with by Mr. H. J. Wilson, who points out that two-thirds of all factory accidents are not due to machines, and that of the remaining one-third only a small percentage could be prevented by better guards. Education of the worker and personal care in avoiding risk are the means for preventing accidents. Safety committees, composed of workers, are the means to employ, and figures are stated which show how one such committee reduced an accident rate of 3·7 per cent. of total employees in 1916 to one of 0·8 in 1920; progress in this direction is said to be steady though slow. One point not referred to by Mr. Wilson appears to us of interest—viz., the comparatively low rate of accidents among women; in all industries 3·1 per cent. of males, but only 0·7 per cent. of females sustained accidents, while of these accidents 1·1 per cent. were fatal among males, and only 0·3 among females. Males are certainly exposed to greater risks in industry, but in the textile industries, where more women than men are employed and upon very similar work, we also find that 1·5 per cent. of males sustained accidents, and only 0·6 per cent. of females, while 1·3 per cent. of these accidents were fatal among males, and only 0·2 per cent. among females. Is it justifiable to conclude that women are "safer" animals than men, and more resistant when injured?

Mr. G. S. Taylor discusses the administration of the various codes of regulations governing safety and health in dangerous trades. Here special interest attaches to an investigation carried out by Mr. Macklin into the grinding of metals; the special danger is that from exposure to silica dust arising during the process from the old-time sandstone wheel. Now is reported the steady substitution for these grindstones of composition wheels fitted to semi-automatic machinery. Composition wheels wear away more slowly, and give rise to less dust, while the dust is less injurious as regards both size and nature, and is more easily collected and removed from the air by well-constructed exhaust ventilation. The substitution is reported to be taking place most rapidly in the cutlery trade at Sheffield with advantage to health and to finance, since the new wheels improve output; and Mr. J. Law considers that the complete elimination of sandstone will probably be reached in due course as experience determines the power, grit, grade, and bond required for the various types of grinding. The effect of this substitution is already

[1] Cmd. 1103. H.M. Stationery Office. Price 1s. 6d.

manifesting itself in mortality statistics; for we learn, whereas among grinders in Sheffield for the five years, 1908–12, the average number of deaths due to pulmonary tuberculosis was 58·2 per year, while the deaths from this cause amounted to 51·2 per cent. of deaths from all causes, that in the two years, 1919–1920, the average number of deaths due to tuberculosis was 33·5, while these deaths formed 33·0 per cent. of deaths from all causes. We are glad to note the diminution in tuberculous silicosis in a city where it has been rife all too long.

Mr. G. S. Ram deals with dangers associated with the use of electricity in factories. He points out that shock from alternating currents at low pressures is more fatal (18 cases out of 25) than from high tension (4 cases out of 20), and stresses the fact that much ignorance as to the importance of artificial respiration still exists even among ambulance men and doctors. No matter how "dead" the victim may appear to be, artificial respiration should be *immediately* applied, and kept up for *at least two hours*, even though the doctor on arrival should rashly pronounce life to be extinct.

The subject of health and sanitation is reported upon by Miss Martindale, who deplores neglect of that short arresting requirement of the Factory Act, "A factory must be kept in a cleanly state." She deplores it in the interests of health and psychology, since the general tendency is for workers to fall into line and become in harmony with their environment. She reviews the conditions found in many industries, and when referring to unnecessary high temperatures, quotes a chance remark, "Bible talks of earning a living by the sweat of the brow—it's done by the sweat of the whole body here."

Progress of Welfare.

Considerable interest attaches to the summary given by Dame Adelaide Anderson of the progress of welfare, progress which makes it certain that the improvements already recorded will steadily spread, largely on the initiative of workers themselves, throughout industry. In this connexion provision of welfare accommodation, such as canteens, and the help of welfare supervisors, are rightly considered to be the forerunners of welfare developments which tend to increase and engender good feelings. Many experiments to meet the particular needs of each works are afoot, and testify to the vitality of the movement in glass works, cutlery and electro-plate works, oil and seed mills, woollen, worsted, hosiery, silk, cocoa-nut matting, and other textile industries, as well as in the metal trades and fish curing; while in a growing number of factories medical women are being appointed to supervise the health of women and girls. In relation to canteens it is found that if they are kept comfortable and clean they are well patronised, thus adding industrial significance to the truth "that unquiet meals make ill digestions." The introduction of washing facilities is reported to be much appreciated; for instance, at one cotton mill, with a long queue of workers waiting to wash at the dinner hour, although the idea of washing-basins had been scoffed at before they were installed, it was found difficult to cope with the numbers who wanted to use them. Here little less than an industrial revolution is proceeding.

When we turn from these matters to first-aid and ambulance, reported upon by Mr. J. C. Bridge, similar rapid advance is recorded. Novelty of treatment by sterilised dressings is passing away, and in a few years first-aid on modern up-to-date lines will become essential to the equipment of every works. Its value can be measured: one large firm of iron and steel manufacturers reduced their annual compensation rate from 17*s.* 7*d.* in 1918 to 16*s.* 7*d.* in 1919, and to 14*s.* in 1920; this result is attributed to avoiding septic cases through provision of first-aid attendance at all hours; elimination of lost time should also be added to the credit side. A picturesque description of sugar-refining is given by Mr. H. J. Wilson, who tells how charcoal filter beds are filled by men only lightly clad, descending through manholes with bags over their heads to the bottom of black, warm cylindrical filters, where they spread the charcoal thrown down to them by treading it level—a dirty and disagreeable operation. A code of welfare regulations is outlined, the establishment of which appears to be badly needed. The subject of factory lighting is reported upon by Miss R. Squire, who is still able to tell of windows in old shops invariably dirty, of walls lacking whitewash, of machines installed without consideration for natural light, while window space is cramped and blocked by stuffed rags and stored materials. Dirty windows and old-fashioned burners are false economy while the sun shines without; illumination in factories clearly lags far behind scientific knowledge.

Medical Research in Factories.

The chapter contributed by Dr. T. M. Legge is of particular interest. It draws attention to the way in which factory doctors are being appointed in large American establishments, a development which is stimulated from within and not imposed by the State from without. Contrast is rendered possible by an account given with the recent development in Belgium where the State has established a complete factory medical service, with a whole-time inspectorate and part-time employment of medical practitioners. Both countries in this matter are well in advance of Great Britain. Dr. Legge reports the result of a careful investigation into the amount of lead present in the air of places where electric accumulators are made; it confirms the conclusion previously arrived at by him, that about two milligrammes of lead inhaled daily represents the minimal dose which will cause plumbism. Continued attention is being directed to the subject of epithelioma among patent fuel workers. Early treatment and medical supervision are now considered able to prevent this disease; but we appear to be no nearer to determining the injurious constituent in pitch which causes malignancy. The subject of industrial dermatitis continues to receive special attention from Mr. Bridge, who holds strongly that, apart from personal susceptibility, personal cleanliness is the all-important preventive. Several interesting inquiries made by him are reported under this heading.

Mr. J. H. Parsons supplies a report on glass-workers' cataract, which commences in the posterior layers of the lens, and also occurs among workers exposed to other molten and red-hot metals. The probability is expressed that this form of cataract results not from the direct action of rays upon the lens itself, but from indirect action affecting the nutrition of the lens through the ciliary body. The rays concerned would appear to be heat rays rather than ultra-violet rays. Prevention can be assured if workers will only wear spectacles of Crookes's glass.

Readers who recall the correspondence in the public press as to the causation of phthisis among printers will welcome the account of an investigation made by Mr. C. B. Roos into the dust of printing shops. The suggestion made that printers suffer from tuberculous silicosis due to inhaling silica dust never had anything except imagination to support it. Now Mr. Roos reports that printing shops contain but little dust, often less than an ordinary room, and that the little dust present contains very little silica, less than is found in London "domestic" dust.

HOSPITAL GRANTS AND WAGES OF EMPLOYEES.—The Secretary to the Treasury was recently asked whether his attention had been drawn to a resolution passed by the public pharmacists branch of the National Drug and Chemical Union, to the effect that no grants from public funds should be made to any hospital or other institution unless the provisions of the fair wages clause were observed in the payment of the employees; and whether he would give effect to this resolution and make the fair wages clause applicable in connexion with the grants to hospitals. The reply was delivered by Sir Alfred Mond, who stated that he had received a copy of the resolution and would bring it to the notice of the Hospitals Commission.

MEDICINE AND THE LAW.

THE DURATION OF PREGNANCY.

THE decision of the Lord Chancellor in the Gaskill case, which turned on the longest possible period of gestation, must have been anticipated by all who had followed the evidence. The husband, a soldier, had returned to duty 331 days before the birth of a large child, estimated to weigh about 11 lb. The Attorney-General was asked by the Lord Chancellor to call expert medical witnesses, and Prof. Henry Briggs, Dr. T. Watts Eden, and Dr. John Fairbairn gave evidence at the adjourned hearing. None of these witnesses was prepared to dogmatise on the impossibility of a 331 days' pregnancy, and the Lord Chancellor, having no other grounds for doubting the probity of the defendant, refused to grant a divorce. Various points of interest arose during the hearing, though the case was more of legal than of medical import. The only point of difference between the views of the expert witnesses was that Prof. Briggs, from his personal experience, maintained that the post-mature child did not invariably show increased size, weight, and general development, whereas Dr. Eden agreed with Dr. Fairbairn that he would not credit a 331 day duration of pregnancy in a hypothetical case unless the child showed decisive evidence of post-maturity. It is quite possible that some of the long cases in Prof. Briggs's own series—the longest of these lasted 306 days—may have arisen from a delay in conception, the spermatozoa remaining alive but ununited. The length of life of the ununited spermatozoa is a factor which remains unsettled, though recent German investigations suggest that it may extend up to 14 days.

Medical Precedents.

The problem set before the experts was not complicated. They were not asked to prove that pregnancy can last 331 days, but merely to state any scientific reason which would make such a duration physically impossible. The word "scientific," used so frequently by those conducting the case, was rather a bitter reminder of the difficulties attending controlled investigation in medicine, and especially in obstetrics. The medical witnesses had as the basis of their opinion only the records of other clinicians and their personal experiences, both dependent, not on trained observation under experimental conditions, but on the statements of more or less credible patients. In fact, our knowledge of the average duration of pregnancy and of its variations has been derived from reasoning which is purely deductive—from the application to a particular instance of a general law founded on experience rather than on experiment. Of what determines the onset of labour we remain ignorant. However, so constant and, within certain limits, so invariable is the period of gestation in any animal that it is almost a specific characteristic; the rarity of phenomena such as a 331 day pregnancy, reckoned from coitus, may be estimated from the fact that the longest previous record, in the series collected by von Winckel, is 315 days from coitus (336 days from the last menstrual period). In this case the child was abnormally large, weighing about 16 lb., whereas in the case under discussion no exact measurements of weight or size were taken. Surprise was expressed by the counsel for the plaintiff that the medical attendant of the defendant should not have taken special precautions to weigh the child in view of the extraordinary interest and momentous importance of a case in which his estimate of the probable date of labour, calculated from information received, was exceeded by so many weeks. The suggestion implies a degree of confidence between patients and doctors which need not, and too often does not, exist. Inaccuracy, misunderstanding, and occasionally domestic conditions may obscure the issue, and the practising doctor learns early in his career that it is impolitic to manifest too great an interest in discrepancies. However, periodical antenatal examinations are becoming more and more general, and may be expected to throw some light on these rare cases of prolonged gestation. For the record of the size of the uterus month by month gives confirmation of the dates supplied, and such records, if combined with those taken of the child after delivery, may serve in the future to differentiate cases in which the abnormal duration is due to delay in conception after coitus from cases where it is attributable to other causes. Had the defendant been a regular attendant at an antenatal centre, and given consent to the production of her case-sheet, she might have been spared the unpleasant necessity of having her virtue vindicated in open court.

The Legal Bearing.

The judgment of the Lord Chancellor in the Gaskill case did not lay down any new rule of law. It has long been established in the courts that the legitimacy of a child born in wedlock must be presumed until it is proved by evidence that sexual intercourse between the parties did not take place at any time, when by such intercourse the husband could, according to the laws of nature, be the father of the child. In the case before him Lord Birkenhead could find no evidence of adultery; only the abnormal length of the pregnancy had raised the issues. There was nothing else to point to the respondent having committed adultery, and she had denied having done so. "I can only find her guilty," said his lordship, "if I come to the conclusion that it is impossible, having regard to the present state of medical knowledge and belief, that the petitioner can be the father of the child. The expert evidence renders it manifest that there can be no such impossibility. In these circumstances I accept the evidence of the respondent, and find that she has not committed adultery." This is a finding of fact based upon medical evidence. The medical knowledge and belief of a future generation may confirm it or may not, but as a judgment of the Lord Chancellor dealing with scientific evidence upon a physiological question of obvious difficulty it will be treated with respect; unless there is good reason to dissent from it. In relation to divorce, and to questions of parentage as affecting succession to property, it is of considerable moment that a period of 331 days is to be looked upon as a not impossible period of gestation. The civil code of France and the Rhenish civil code appear to agree in placing the limit at 300 days, the common law of Prussia having recognised 302 days as possible. This presumably implies that a child might inherit property in the United Kingdom, and at the same time be denied an inheritance of property from the same source situated in France or Germany.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

King Edward VII. Memorial Tuberculosis Institute.

AT a public meeting held in Madras on May 17th, 1910, a general committee was appointed to decide the most appropriate form of memorial to the late King-Emperor Edward VII. It was resolved that the memorial should take the form of a hospital for consumptive patients, with a sanatorium or sanatoriums in suitable localities in the Presidency; a general appeal for funds was issued, and attempts were made to secure suitable sites. After some difficulty in the latter connexion, a resolution of the committee was sent to the Government in November, 1912, to the effect that the hospital should take the form of a tuberculin dispensary in the city of Madras, and that the balance of the funds should be devoted to the construction of a sanatorium in a suitable locality. The Government agreed to the proposal, but suggested that the institution be called a tuberculosis institute instead of a tuberculin dispensary, in

order to avoid the implication that any one form of treatment would be practised in it to the exclusion of others. In order to preserve the individuality of the institute as a personal memorial to King Edward, it was decided not to merge it in any Government organisation like the general hospital; the Government granted a convenient site and the subscriptions amounted approximately to Rs.2½ lakhs. The Government also obtained sanction from the Secretary of State to contribute an equivalent sum for the establishment and maintenance of the institute.

Plans and estimates, showing an expenditure of Rs.80,000, were prepared and approved, and the foundation-stone was laid by Lord Pentland on July 16th, 1917. Owing to war conditions and the difficulties connected with labour and supply of materials, progress was slow, and the costs gradually increased until expenditure amounting to Rs.280,000 was incurred. Moreover, the securities belonging to the committee, of the face value of Rs.5.15 lakhs, depreciated 50 per cent., and only the generosity of the Madras Government prevented the closing down of the tuberculosis institute, which, in temporary quarters, has given relief for the past five years to about 3000 patients per annum.

The institute has now been formally opened by Lord Willingdon, the Governor, in the presence of a large medical and lay gathering. In an introductory statement Archbishop Aelen, chairman of the committee, described the history of the institute and outlined the objects for which it had been established under the following heads: (1) relief to the tuberculous sick; (2) training of medical practitioners, students, and nurses in a knowledge of the diagnosis, treatment, and management of tuberculous patients, and public health administration connected therewith; (3) research work connected with tuberculosis; and (4) dissemination to the public by lectures and leaflets of information and knowledge relating to the disease. The chairman also explained that a tuberculosis institute was only the first unit in anti-tuberculosis measures; the second unit, in the form of a block of tuberculosis wards, had been provided by the munificence of Rao Bahadur M. C. T. Muthia Chetti, who had contributed the sum of half a lakh of rupees for the purpose. He appealed to private benefactors to help in the provision of the other necessary units—viz., a sanatorium, a farm colony, and a hospital for advanced cases. The Governor, in declaring the institute open, stated that another stage had now been reached in the attack on tuberculosis. In Dr. Chandrasekhar the institute had for its head an able and experienced medical officer, under whose guidance its progress was assured. There had been apprehension regarding the opening of a temporary tuberculosis hospital in Temple Gardens, a building situated in the midst of a densely-populated area of the city; but this arrangement was merely temporary, the intention being to construct a block of tuberculosis wards in the close vicinity of the institute, and as soon as this block was complete the hospital in Temple Gardens would be closed. On the authority of those best qualified to know, he added, there was no possible risk of infection to those residing near Temple Gardens. He hoped that before many years were over a Presidency hospital with a medical college near by might make that locality the therapeutic centre of the city of Madras.

The institute, designed by the late Mr. Thomas, consulting architect to the Government, has two storeys, with a large central hall containing a broad staircase and roofed with a dome. On the ground floor are situated the waiting rooms for patients, the examination rooms, the treatment rooms, and dispensary; while on the upper floor are the laboratories and microscope rooms and the administrative offices. The floors and staircase are of polished marble, and in this institute Madras has a memorial to the late King-Emperor in every way worthy of the Senior Presidency of India.

Madras, July 7th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

THE Ministry of Public Health and Physical Education is going to open at the Prague Medical Faculty post-graduate courses for physicians in the autumn. The course for general practitioners will include theoretical lectures as well as practical exercises in all branches of medicine. Another course, organised under the auspices of the Masaryk Antituberculosis League, will be for physicians desiring to become officers in tuberculosis dispensaries. The third course will be conducted along the lines of a venereal diseases institute. It will be open not only to physicians but also to teachers and other persons interested in the problem.

Tuberculosis Death-rate.

The tuberculosis death-rate in the Republic has shown a very sharp decline in the years following the war. The curve began to decline in the years 1885, when the rate stood at 460 per 100,000, and continued slightly to decline until 1900; after the latter year the downward trend of the curve became more rapid until the outbreak of war in 1914. At that time the rate was about 320; it rose rapidly to 380 in 1916, and reached a maximum figure in 1918, the year of the influenza epidemic. The figures for 1920 show that not only has the rate reached the pre-war level again, but that the general trend of the curve has been maintained; the rate for 1920 is 275, some 50 points lower than in 1914.

Popular Health Education.

The League of Red Cross Societies is carrying out a demonstration by means of a unit for popular health education. The unit, organised by Mr. Marshall C. Balfour, of the League, consists of a director, one advance agent, and two physicians as lecturers; an organiser will shortly be added. The unit has a truck equipped with a kinema apparatus of its own; lectures on tuberculosis, venereal disease, and child welfare are given to children in schools, to workers in factories, and to the people as a whole in public buildings. Pamphlets and posters on health topics are being distributed. The unit began its work in Prague, and is now touring the country districts. Its success shows that the unit system, as developed in France by Prof. S. M. Gunn of the Rockefeller Foundation, is applicable also to the conditions in Czecho-Slovakia. An international conference on venereal diseases will be held in Prague early next October; it is being organised by the League of Red Cross Societies, and will follow the same lines as the recent conference in Copenhagen. Delegates from Poland, Hungary, Roumania, Austria, Jugo-Slavia, and Greece will be invited to attend. This conference will not only give a new impulse to the fight against venereal diseases, but will also bring together, for the first time since the war, the representatives of these countries for a peaceful discussion of common problems.

Medical Library and the Rockefeller Foundation.

The city of Prague, which is at the present time the educational centre not only for Czecho-Slovak, but also for Jugo-Slav, Ukrainian, and Russian medical students, has not hitherto had a well-organised medical library or reading room. The Ministry of Public Health and Physical Education has recently opened on its own premises a library and reading room where some 120 periodicals, including German, French, and English publications, will be made accessible to every visitor. At the present rate of exchange it has been very difficult for even the universities to secure foreign publications; for this reason the Rockefeller Foundation has offered to supply these periodicals to the universities at the cost according to the pre-war rates of exchange, the Foundation itself meeting the difference due to the deterioration of the currency.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Norwich.

Dr. H. C. Pattin gives the estimated population for 1920 as 125,700. The birth-rate has jumped from 16·35 in 1919 to 25·6 in 1920. The recorded death-rate —12·47—becomes 11·5 when corrected for the age and sex-constitution of the population. The infant mortality rate was 74 per 1000 births, 71 among legitimate infants and 133, or nearly double, among illegitimate infants. Dr. Pattin looks forward to the provision of better central accommodation for infant clinics and to the establishment of a model maternity hospital on the outskirts of the city. Over 1200 new babies were brought to the clinic during the year. The health visitors also act as school nurses; 2724 newly-born infants were visited and of these 475, or about 1 in 6, were reported to be ailing at the time of the first visit. Of the mothers, 2390 were reported to be healthy, 240 delicate, and 94 badly nourished; 730 infants were, for varying periods, fed with dried milk. "The results of the feeding with dried milk, on the whole, have been satisfactory—in some instances quite remarkably so." The standard income adopted for the purpose of supplying milk below cost price was 10*s.* per week per head in the family and Dr. Pattin believes that "this has worked out very fairly." Out of 2957 defects found among the school children 82 per cent. were remedied. Of the newly-notified consumptives 42 per cent. had a separate bedroom, 12 per cent. a separate bed in a double-bedded room, and 46 per cent. shared a bed. The joint scheme for treating and training consumptives of Norwich, Yarmouth, and the county at Stanninghall is making progress. Dr. Pattin does not think the attendance at the V.D. clinic is satisfactory and judges from the increase in ophthalmia neonatorum notifications that there has been some increase in the prevalence of venereal diseases; 120 new cases of gonorrhœa and 75 cases of syphilis attended the clinic from Norwich. There were 31 cases of ophthalmia neonatorum notified and one of these ended in complete blindness; the others recovered. As regards prevention of these diseases Dr. Pattin pins his faith to instruction and training of the faculty of self-control in the new generation and thinks that as regards the existing generation the practical limitation of effort to instruction concerning danger, moral suasion, and provision of treatment is not satisfactory. "The scarcity of houses persists, 48 only having been erected in 1920. The council's scheme provides for the erection of a total number of 1200; and that figure will hardly keep pace with the natural increase in population, leaving the real shortage pretty much as it is. The occupation of numbers of unsatisfactory dwellings has therefore still to be tolerated; and with this yet more unsatisfactory conditions of relative overcrowding."

The death-rate from pulmonary tuberculosis was 1·0 and from all forms of tubercle 1·3. The boot-making industry contributed 12·0 per cent. of the phthisical cases notified in the year and 20 per cent. of the deaths. As regard the prevention of tuberculosis Dr. Pattin says: "I attach more importance to the provision of adequate food than to any other measure." Many will agree with him especially if he refers to quality rather then quantity. We note that 149 smoke observations were taken and several persons cautioned. We shall not get much further with the purification of the air until local authorities realise that industrial smoke from boiler furnaces is quite unnecessary and take more drastic action against offenders.

Stoke Newington.

Dr. H. R. Kenwood's report for 1920 gives the estimated population as 52,984. The birth-rate was 23·1, against 16·8 for the preceding year, and the recorded general death-rate was 12·4, which is above that of 14 other metropolitan boroughs. The comparatively poor position of Stoke Newington among the metropolitan boroughs, Dr. Kenwood explains, is due to an exceptionally heavy incidence of whooping-cough, scarlet fever, and diphtheria. The infant mortality rate was 80·1 and the death-rate from pulmonary tuberculosis 0·7, compared with 1·0 for London. "The borough of Stoke Newington is mainly a residential area, a considerable proportion of the population being employed elsewhere. The residences comprise those of the well-to-do and the tenements of the low-wage earner." At times during the year only the more urgent cases of scarlet fever and diphtheria could be removed, owing to lack of accommodation in the Metropolitan Asylums Board hospitals. The Ministry of Health have made suggestions for improving the service given by the joint Hackney and Stoke Newington tuberculosis dispensary by the provision of an evening session, a special schools session, and an arrangement by which the time during which patients are kept waiting will be reduced to a minimum.

The work of the antenatal clinic grows. Dr. Kenwood thinks that when the midwife is more fully trained "she will become the ideal antenatal health visitor." He also voices the need for dental treatment and suggests a joint dental clinic with the education authority. The day nursery costs the borough over £400 a year and there were only 5000 attendances in 1920. We are not surprised that the committee are to consider closing it. Stoke Newington, like other towns, is suffering from overcrowding, a shortage of houses, and a difficulty in getting war arrears of repairs cleared off. Dr. Kenwood has a good deal to say, too, with regard to careless and destructive tenants, and thinks we need additional powers to punish them as a help towards their education.

Blackpool.

The estimated population of Blackpool is 70,545 and during recent years the town has had more deaths than births. Dr. E. W. Rees-Jones, in his report for 1920, submits a table showing that the birth-rate in 1878 was 38·8 per 1000, that in 1913 it was 16·25, in 1918 10·63, in 1919 11·84, and in 1920 it has risen to 16·71.

Dr. Rees-Jones tells us that the chief occupation of the inhabitants is catering for visitors, but that there is a strong tendency to establish industries, such as the manufacture of waterproof coating, which employ female labour. The industries of the town are healthy. With regard to the low birth-rate, Dr. Rees-Jones points out that there is a low proportion of married women below the age of 45 years. The percentage of illegitimate to total births has always been high in Blackpool. Thus the figures for the eight years beginning with 1913 have been as follows: 8·05, 6·87, 7·62, 8·81, 11·52, 11·18, 14·98, and 8·31. In spite of the large number of illegitimate births, the infant mortality rate was 69·6, but Dr. Rees-Jones says, "We must aim at a rate not exceeding 50." Of the 82 infant deaths, 13 were those of illegitimate infants, and 57, no less than 70 per cent. of the total, died before reaching the age of 3 months. The death-rate (corrected for age and sex constitution of the population) during 1920 was 13·63. The death-rate from phthisis (Dr. Rees-Jones apparently does not give the rate from all forms of tuberculosis) went up during the war and has now declined. The figures, beginning with 1912, are as follows: 0·79, 0·76, 1·07, 1·09, 1·06, 1·03, 1·34, 0·69, and 0·86. Dr. Rees-Jones recommends the corporation to provide dental treatment for tuberculous patients. Dr. B. F. Bartlett, assistant medical officer of health, has carried out the duties of venereal diseases officer and reports: "During the past 24 months the number of cases attending the clinic for treatment has increased ten times. The town being so largely a health and pleasure resort, with a fluctuating population, many cases are necessarily recorded as transfer cases without having completed their full course of treatment." More accommodation for the clinic is needed. There were 37 cases

of ophthalmia neonatorum, or more than 3 per cent. of the total births. Is this high percentage due to the large number of illegitimate births, or to the fact that every case of "slight discharge" notified by a midwife is counted as a notification? Fortunately, no permanent damage to eyesight resulted. The very marked shortage of houses is being greatly met by the Municipal Housing Scheme, which provides for the erection of 664 houses in three separate estates.

Ramsgate.

In his report for 1920, Dr. W. J. Bannister describes many of the well-known advantages of Ramsgate as a health resort. The estimated population for 1920 was 29,338. The birth-rate has gone up from 17 per 1000 in 1919 to 28 in 1920. The death-rates are, as Dr. Bannister suggests, no doubt affected by the influx of aged persons and invalids who come to reside in Ramsgate in the hope of prolonging their lives. Thus among the 339 deaths there are 45 from heart disease, 40 from cancer, and 27 from phthisis. Were it not for this, one would regard a general death-rate of 13·6 compared with 12·4 for England and Wales, and a tuberculosis death-rate of 1·22, slightly higher than that of Sheffield, as somewhat paradoxical. 1920 was a year of low infant mortality rates, and a rate of 71·6 cannot be considered satisfactory for a health resort like Ramsgate. The explanation is no doubt to be found in the large number of artificially fed infants. Thus we read, on page 39, the result of inquiries as to the feeding of infants born in 1919: "Of 451 of these children, 145 were breast-fed for 9 months; 72 were breast-fed for 6 months; 94 for 3 months; and in the case of 115 attempts at breast-feeding were made." Dr. Bannister has something to say about the unsatisfactory state of the law as regards adulterated milk. One would think that these health resorts in the South of England are in an ideal position to create a demand for grade A (certified) milk. We believe it is a fact that there is not at present a single grade A (certified) dairy farm in the "Garden of England." A centre for the treatment of venereal diseases was opened during the year. No houses were built during the year, and consequently the overcrowding due to some 200 houses being occupied by more than one family continues. 26 houses were demolished, mostly houses which had been damaged by air-raids or bombardments. Dr. Bannister also submits his report as school medical officer. Of 142 children suffering from "tonsils and adenoids," only 37 received operative treatment and many cases yielded to indirect treatment, such as the removal of carious teeth. Of 478 children of the 6 to 8 group examined at the schools by the school dentist, it was found necessary to refer 215 for treatment. Satisfactory arrangements have been made for the treatment of minor ailments at the school clinic and treatment was secured for a high proportion of the children referred for treatment on account of minor ailments, visual defects, and defects of nose and throat and teeth.

The Services.

ARMY DENTAL CORPS: AMENDED RATES OF PAY.

THE rates of half-pay for officers of the Army Dental Corps, which were fixed in January last at half the rates of full pay, have been amended and will now be the rates provided for other arms of the Service in terms of Army Order 324 of 1919.

THE INDIAN MEDICAL SERVICE AND JAPAN.

An officer of the Indian Medical Service may be selected to proceed to Japan next year for three years' study of the language. It is remarkable that in India the officers of the Indian Medical Service share equally with the officers of the Indian Army all the opportunities and rewards for the study of foreign language, whereas in the British Army the opportunities offered to their combatant brethren are not shared by the Royal Army Medical Corps.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. A. W. Gunn to be Surg. Lieut.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Temp. Maj. F. M. Rodgers relinquishes his commn. on ceasing to be employed at the Lord Derby War Hospital and retains the rank of Maj.

The undermentioned Capts. to be Majs.: (Bt. Maj.) G. H. Dive, (Temp. Maj.) L. C. Hayes, (Bt. Maj.) R. Gale, K. Comyn, (Bt. Maj.) F. R. Laing, (Temp. Maj.) A. S. Cane, J. M. Weddell, (Actg. Maj.) A. P. O'Connor, T. H. Dickson, H. G. Robertson, H. V. Stanley, P. C. Field, R. M. Davies, E. C. Stoney, and T. W. Stallybrass.

Lt. A. McD. Simson is secd. for service with the Egyptian Army.

ARMY DENTAL CORPS.

Capt. A. B. W. Rust to be Maj.

The undermentioned to be Lts., with the temp. rank of Capt.: Temp. Capt. N. H. Medhurst, from unemployed list, R.A.F. Dental Branch, and Flight Lt. J. H. W. Fitzgerald, Dental Surg., from R.A.F. Dental Branch.

SPECIAL RESERVE OF OFFICERS.

Lt.-Col. P. Paget to be temp. Lt.-Col., with pay and allowances as Maj.

TERRITORIAL FORCE.

Lt.-Col. A. E. Jerman relinquishes his commn. on account of ill-health and retains the rank of Lt.-Col., with permission to wear the prescribed uniform.

Capts. P. T. Tolputt and W. S. Richardson to be Majs.

Capt. J. Marshall (late R.A.M.C., Spec. Res.) to be Capt.

Capt. A. C. Pearson resigns his commn. and is granted the rank of Maj.

Capt. and Bt. Maj. C. S. P. Hamilton, R.A.M.C., vacates the appt. of Adjt., R.A.M.C. Schl. of Inst., Wessex Divn. (T.F.).

Capt. W. W. S. Sharpe, R.A.M.C., to be Adjt. of the R.A.M.C. Schl. of Inst., Wessex Divn. (T.F.).

Maj. H. W. Williams resigns his commn. and is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Maj. G. P. Chappel resigns his commn. and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. G. F. Hardy (late R.A.M.C.) to be Capt.

Capts. W. A. Milne, H. A. Philpot, and G. C. Walker resign their commns. and retain the rank of Capt.

The undermentioned officers, having attained the age limit, are retired: Lt.-Col. J. M. Moir retains the rank of Lt.-Col., with permission to wear the prescribed uniform; Maj. W. G. Sutcliffe is granted the rank of Lt.-Col., with permission to wear the prescribed uniform.

Majs. A. Ehrmann, H. Dutch, and C. A. Morris retain the rank of Maj., with permission to wear the prescribed uniform.

Maj. H. Meggitt retains the rank of Maj.

Capt. T. S. Allan is granted the rank of Lt.-Col.

Capt. A. G. T. Hanks is granted the rank of Maj.

Capts. H. G. L. Allford, W. R. Murison, A. Ambrose, A. Macphail, J. F. Hall, J. K. Brownlees, and G. Eustace, retain the rank of Capt.

TERRITORIAL FORCE RESERVE.

3rd Lond. Gen. Hos.—Capt. W. S. Handley resigns his commn. and retains his rank.

DEFENCE FORCE.

Dep. Asst. Dir. of Med. Servs.—Temp. Lt.-Col. P. Paget to be Dep. Asst. Dir. of Med. Servs.

Asst. Dir. of Med. Servs.—Temp. Col. F. W. Higgs, Def. Force, relinquishes his temp. appt.

Temp. Maj. R. Davidson, Def. Force, to be Dep. Asst. Dir. of Med. Servs.

Lt.-Col. E. P. Connolly, R.A.M.C., to be temp. Col.

Capt. R. Davidson to be temp. Maj.

Temp. Cols. E. V. Gostling and F. W. Higgs relinquish their temp. commns.

The undermentioned relinquish their commns.: Temp. Majs. J. C. S. Burkitt and A. Robertson, Temp. Capts. W. Tresawna, J. C. Anderson (retains the rank of Capt.), R. M. Wilson, Temp. Lt. P. Lloyd-Williams.

2nd (Highland) Fd. Amb. (D.F.).—Temp. Capt. H. J. Rae and Temp. Lt. H. J. Dawson relinquish their commns. and retain their rank.

1st (Lond.) Fd. Amb. (D.F.).—Temp. Maj. E. Knight relinquishes his commn.

Temp. Maj. C. V. Bulstrode and Temp. Capts. H. Wilson and A. C. H. McCullagh relinquish their commns.

2nd (Northumbrian) Fd. Amb. (D.F.).—Temp. Lt.-Col. D. L. Fisher relinquishes his commn.

Temp. Capt. J. A. Stenhouse relinquishes his commn.

2nd (E. Ang.) Fd. Amb. (D.F.).—Temp. Capt. F. W. Poole to be temp. Maj.

3rd (S. Midland) Fd. Amb. (D.F.).—Temp. Lt.-Col. T. A. Green relinquishes his commn.

Correspondence.

"Audi alteram partem."

THE VOLUNTARY HOSPITAL SYSTEM.

To the Editor of THE LANCET.

SIR,—Your leading article in THE LANCET of July 30th (p. 237) is, if I may say so, both opportune and apposite. It is essential that those who support and those who criticise the "voluntary hospital system" should, as you say, agree as to "what it is of which they are speaking and thinking"; otherwise we may find that we may be agreed where we are not precise and precise where we are not agreed. No doubt, as Pascal said, it is desirable to define all our terms and prove all our propositions; nevertheless, as John Hunter remarked, definitions are of all things the most damnable.

When King Edward's Hospital Fund, towards the end of last year, set itself to consider what principles of policy should be put forward with a view to preserving the voluntary system, I submitted a memorandum on the subject, in which I said:—

"It is well to have some definite notion of what is implied by the 'voluntary hospital system.' The voluntary hospital system, as it has been generally understood in this country, usually implied: (1) That the hospital is mainly supported by voluntary subscriptions or endowments; (2) that the staff consists of honorary physicians and surgeons who render voluntary and gratuitous service to the patients; (3) that eligible patients are freely admitted, and any contributions towards expenses they can make are voluntary offerings; (4) that the hospital is managed by an unpaid voluntary board, elected by subscribers, and independent of any State or municipal department or bureaucratic control."

I then went on to point out how the voluntary system had been menaced from without and from within, and undermined in regard to all these implications. The real problem appears to be whether this undermining is to proceed further, whether the process can or should be reversed, or whether equilibrium is possible and can be preserved in the position which at present obtains.

In a paper I contributed in 1912 to the Conference of the British Hospitals Association at Birmingham, entitled "Hospitals and the State," I observed that in this as in other matters communism was replacing voluntaryism, and that—

"We have arrived at this stage, half unconsciously, as the result of a series of legislative enactments, nearly all making in one direction, but as is our wont in this country without any very clear preconception of the end in view, and often accompanied by ingenuous disavowals of any socialistic trend on the part of the authors of the legislation in question."

I am afraid that some ardent supporters of the "voluntary system" have, no doubt unwittingly, contributed in some measure to undermining it. Lord Cave's Committee cautiously avoided defining what the voluntary system is which they are convinced is "worth saving," and of which they say "it would be lamentable if by our apathy or folly it were suffered to fall into ruin." The Report, however, adumbrates certain policies which the Committee regard as hostile to, or incompatible with, "the voluntary system." Thus they insist "if the voluntary system is worth saving, any proposals for continuous rate or State aid should be rejected," although they add "we think it is clear that in order to save the hospitals from immediate disaster some assistance must be forthwith given from public funds." Again, they regard voluntary contributions by patients as "more in accordance with the voluntary principle" than requiring a fixed charge as a condition of admission. And again in reference to staff funds, to which in your article you direct special attention, the Committee think that any extension of the practice of carrying a percentage of grants from public authorities, beyond the present limits, to the medical staff would "endanger the future of the voluntary system." The bearing of the partial replacement of an honorary visiting staff by a whole-time paid staff, subsidised from public funds, on the preservation of the voluntary system does not appear to have engaged the attention of the Committee.

The newly constituted Voluntary Hospitals Commission have, however, ventured where Lord Cave's Committee feared to tread, and have vouchsafed the definition of a voluntary hospital:—

"An institution (other than an out-patient dispensary) managed by a responsible committee, and wholly or mainly supported from voluntary sources (including income derived from endowments or investments), the object of which is to provide medical or surgical treatment of a curative character."

It remains to be seen whether this definition will hold, in the light of the discussions at Newcastle and elsewhere, and some may regret with you the difficulty of maintaining unmodified the voluntary system "in which most of us have been brought up, with all its splendid ideals and occasional defaults."

I am, Sir, yours faithfully,

W. J. COLLINS.

Regent's Park, N.W., August 2nd, 1921.

THE ULTRA-MICROSCOPIC VIRUSES.

To the Editor of THE LANCET.

SIR,—In a letter published in THE LANCET of July 23rd Dr. F. W. Twort draws attention to the work of d'Herelle and his own earlier work along similar lines. If the phenomena discussed are indeed due to ultra-microscopic viruses the credit of first describing them undoubtedly rests with Twort. I wish, however, to reiterate the opinion which was expressed in a paper recently published in THE LANCET [1] that these phenomena of interference with bacterial growth are more accurately ascribed to the production by bacteria of relatively thermostable substances, possibly of the nature of ferments. If this view is correct, and to some such explanation Twort appears, in his paper, to lean, then the credit of first directing attention to the phenomenon undoubtedly goes to C. Eijkmann, who did much careful work on the subject, publishing a number of papers between the years 1904 and 1907. Eijkmann has not given any definite name to the substances, and the name "autotoxin" suggested by Conradi and Kurpjuweit is inaccurate in so far as the substances produced often affect other bacteria more powerfully than those producing them. On the analogy, therefore, of leucocidins we have proposed that these substances should be called "bactericidins."

I am, Sir, yours faithfully,

JAMES WALTER MCLEOD.

University of Leeds, July 29th, 1921.

THE SUPPOSED EXTERNAL EFFECTS OF HUMAN VISION.

To the Editor of THE LANCET.

SIR,—In his interesting paper, Dr. C. Russ states that the only reference in literature to the subject with which he is acquainted is a paper by Lord Kelvin in the Philosophical Transactions of the Royal Society On the Supposed New Force of M. J. Thore. Surely he means not Lord Kelvin, but Sir William Crookes, who wrote a paper under this heading in which he ascribed Mr. Thore's results to the effects of heat radiation.

Dr. Russ and others interested in the subject should, however, also study Sir William Crookes's several and voluminous papers on Attraction and Repulsion resulting from Radiation, published in the Royal Society's Philosophical Transactions from 1873 to 1879, and particularly Crookes's historical account of experiments by numerous physicists from 1792 to 1871 on the subject of repulsion by heat.

[1] McLeod and Govenlock: THE LANCET, 1921, i., 900.

This is contained in the Philosophical Transactions for 1874, pp. 501–3, where he mentions cases in which the operative heat radiation originated from the faces of the experimenters.

I am, Sir, yours faithfully,

A. A. CAMPBELL SWINTON, F.R.S.

Victoria-street, Westminster, August 9th, 1921

AN INSTRUMENT WHICH IS SET IN MOTION BY VISION.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Ian D. Suttie's letter in your issue of August 6th, the desirability of further work is obvious. My researches so far have been voluntary and unendowed, but there is a limit to one's endurance, at least on the financial side. Even Dr. Suttie must take this factor into account when complaining that I have not worked out yet all the variations of the eye force in diseases, cataracts, &c. He probably has already realised that time given to research must be at the expense of any medical man who has a living to get in practice. The tone of the critical remarks of Dr. Suttie is in sharp contrast to the interested and modest observations by the leaders of science to whom I gave the demonstrations. My assistant and I were impressed of course by the natural power but penetrating acumen of these men upon the numerous occasions that the effects were demonstrated before them. I hold no academic qualifications in physics and none are attached to Dr. Suttie's letter, but perhaps this was only his modesty.

Referring to Fig. 2, I must suppose that Dr. Suttie has not yet had time to make merely a few thousand observations on a model of that type. If and when he has done so, he will find with pleasurable surprise that while applying all his will-power or psychic force, or whatever it is, the condenser will not move, provided his vision is withheld. As a general principle I may remind him of the unwisdom of invoking a force as little known and as complex as psychology to explain something demonstrably due to a variation in a known (electrostatic) state. The force is reflectable, though the slight loss of power at so many feet from the mirror had to be ignored in the reference I made (p. 223). His reference to cataracts as controls is surely a feeble suggestion, and I gave him the best illustration of a means of cutting off the force by closing of the eyes, referred to under the heading of controls.

Dr. Suttie thinks my experiments have allowed me to outrun the appropriate amount of reflection. This may be so, as I have only been pondering them for four years, and it is one week since my work has reached him by means of THE LANCET. He may have heard me at the Congress giving more than once an amiable reminder to the questioners that when current electricity had just been found out it was unreasonable to expect us to be already driving the trams and telephones and lights by its power. Dr. Suttie's closing remarks appear to group him amongst the earnest searchers after the truth. The qualifications for that position are the production of much hard work and the other sacrifices. After such efforts in our subject he may well take the matter further than I have, and then he will not be so troubled by anxieties as to what fraud or abuse it may suffer by charlatans or others, who are the equivalent of the weeds in every garden. These latter activities will thrive as long as human credulity continues to like entertainment at least as much as instruction.—I am, Sir, yours faithfully,

Beaumont-street, W., August 8th, 1921. C. RUSS.

THE FÆCES IN ALIMENTARY DISORDERS.

To the Editor of THE LANCET.

SIR,—It is evident that in my article on this subject in THE LANCET of July 2nd I have failed to make my meaning clear to Dr. Chalmers Watson. I expressed the view that, in routine examination of the fæces, a Gram-stained bacteriological film was of little help; if, however, definite organisms, such as typhoid, were suspected, it was another matter. In that case (I left my readers to assume) the appropriate bacteriological methods were to be undertaken as a matter of course. I would assure Dr. Watson that my statement in regard to the small value of a Gram-stained film is based on experience in which the coöperation of both clinician and bacteriologist has been intimate; but I welcome his insistence on the necessity for such coöperation.

I shall be glad to learn the sort of conclusions which Dr. Watson himself is able to draw from Gram-stained films. Undoubtedly in some cases there are what for clinical purposes may be called "stools of putrefaction," in others "stools of carbohydrate fermentation," each with their more or less typical bacterial flora; but these conditions can be recognised without recourse to bacteriological investigation. Sometimes these findings are linked up with some abnormal clinical condition, sometimes they are associated with apparently good health; although, even when, for example, a "stool of putrefaction" is associated with the symptoms of so-called "intestinal toxæmia," the pathology of the condition is not at all clear. Undoubtedly the recognition of these types of stool gives useful indications for treatment, especially in the matter of diet. But to assume, as some clinicians appear to do, that the preponderance of a Gram-positive or Gram-negative flora has any special significance in that connexion seems to me to be at present quite unwarranted.

I am, Sir, yours faithfully,

Liverpool, July 30th, 1921. ROBERT COOPE, M.D.

THE OBJECTIVE STUDY OF THE NEUROSES.

To the Editor of THE LANCET.

SIR,—I am afraid that Dr. F. L. Golla has pushed the bottom out of his receptacle of interesting material in the last column of the report of his third Croonian lecture in your issue of August 6th. A woman tidies up immediately before childbirth because the probable date of it has been fixed, and because she knows that her chests of drawers will be looked over by others when she is in bed. His asking a midwife whether this tidying habit was common counts just nothing as a confirmatory procedure; as well might a laboratory analyst ask his bottle-washer to decide whether such or such a result was right or no. Only when Dr. Golla writes, "We have here an instinct untainted by any possibility of mimicry, and since its existence is apparently unknown, free from any complication due to suggestion," does he seem to invite controversy, for the remainder of the lecture is extremely interesting and useful.

What about most men and women tidying up before going to bed for operations of various kinds? Are they fetching up the old nest-making instinct?

I am, Sir, yours faithfully,

HAYDN BROWN.

Cavendish-square, W., August 5th, 1921.

LABOUR AFTER CRIMINAL ABORTION.

To the Editor of THE LANCET.

SIR,—The following notes of a case may interest gynæcologists and also medical jurists. Some years ago a married woman, finding herself two months pregnant, endeavoured to procure abortion by taking pills. These failing, she went one morning and, presumably, visited an abortionist; later in the day she joined her husband, who was innocent of what was going on, and spent the afternoon shopping with him. It was not until late that evening that she was seized with pain, after giving herself a douche. The following day a doctor was sent for, who found her suffering from commencing peritonitis. The next day, 48 hours after the symptoms began, she was operated upon, when there was no sign of any wound in the vagina or cervix, but there was general peritonitis with pus in the pelvis. A perforating wound, large enough to

admit the tip of the little finger, was visible in the fundus of the uterus. The edges of the wound were sloughing. The patient's condition next day was apparently so hopeless that an attempt was made to obtain her dying deposition. She obstinately refused, however, to admit that any illegal operation had been done on her. With even greater obstinacy she refused to die, and after a long illness recovered.

She had been told that her illness must have destroyed any chance of her ever having children. About a year later she informed her doctor that she was again pregnant. Considering the damaged condition of her abdominal wall and the probability of adhesions, it seemed inevitable that labour would be difficult and that trouble might arise in the third stage of labour. Her confinement took place in due course, labour being easy and quick and the puerperium normal in every respect. To the obstetrician the case is an interesting illustration of the capacity of the uterus for recovery, and of the danger of foretelling a difficult confinement. To the medical jurist the case is important as the woman seems to have spent an afternoon shopping after perforation of the uterus with a weapon, however caused. In the law courts recently an eminent specialist stated in evidence that such a thing would be impossible, and, apparently, that definite expert pronouncement had an important bearing with the judge and jury. The case narrated above, therefore, also illustrates the danger of stating in a court of law that anything in medicine is impossible.

To any medical man interested in the case from the point of view of medical jurisprudence further details will be supplied.

I am, Sir, yours faithfully,

July 31st, 1921. X.X.X.

PRIVATE AND PANEL PRACTITIONERS.

To the Editor of THE LANCET.

SIR,—In the last paragraph under Public Health Services in your issue of August 6th, you state that "technically an insurance practitioner is entitled to charge a fee to the patient of another practitioner" who comes to the former for treatment in preference to his own "panel doctor," but you go on to say that "any practice of this sort would tend to be seriously prejudicial to the medical service for the insured." Why and how thus prejudicial? The panel doctor for whom the person has in the first case "signed on" for gets *his* capitation fee legitimately, though he does nothing for it, the second panel doctor gets his *fee* from the patient willing to pay it, and the insurance funds are saved the expense of medicine or anything ordered by the second doctor, for as the patient is a "private" one the second panel doctor either supplies it or sends his patient to a chemist with a prescription—presumably not to be supplied at the cost of the insurance finances. And the patient gets *his* satisfaction by consulting the medical man he wishes to consult. The patient can, of course, transfer to the practitioner he desires to attend him, but until he does so I do not understand how such a proceeding can be so terribly prejudicial to the medical service for the insured.

I am not and have never been on the panel list and I hope I shall never be compelled to put my name on it, but I am brought into contact daily with many panel practitioners and I am interested in questions concerning panel practice.

I am, Sir, yours faithfully,

August 6th, 1921. NON-PANEL.

AN APPEAL FROM THE RUSSIAN RED CROSS.

To the Editor of THE LANCET.

SIR,—As a Russian practising in this country permit me to associate myself with the stirring appeal made by my colleague, Dr. Belilovsky. I feel confident that the British medical profession, which has always been most responsive to any appeals in the name of humanity to alleviate suffering, will not turn a deaf ear to such a heart-rending S.O.S. from my unfortunate country. I view with great satisfaction that the International Red Cross Committee and the acting Director of the League of Red Cross Societies have jointly issued a statement proposing the formation of an international relief organisation to coördinate the activities of all the voluntary bodies. The Supreme Council, too, is giving attention to this urgent problem. But meanwhile what is needed is immediate assistance from each individual doctor in this country and from the British medical profession as a whole.

I am, Sir, yours faithfully,

L. ZEITLINE, M.R.C.S. Eng.

Gateshead, August 9th, 1921.

Obituary.

WILFRED W. E. FLETCHER, M.B.CAMB., D.P.H.,

LATE MEDICAL INSPECTOR, LOCAL GOVERNMENT BOARD.

IT was with great sorrow that the many friends of Wilfred William Ernest Fletcher heard of his death on July 31st, at the age of 64, in a London nursing home after a serious operation. In compliance with his expressed wish he was buried in the graveyard of his native village of Tarleton, which lies about eight miles from Ormskirk. Dr. Fletcher was a Lancashire man and came of an old clerical family well known in the county, his father having been for many years rector of Tarleton, and his late brother rector of Chorley and archdeacon of Blackburn. He was educated at Rossall School and Caius College, Cambridge, his medical studies being carried out at St. Bartholomew's Hospital. He took his B.A. degree in 1881 and his M.B. in 1884, in which year he obtained also the M.R.C.S. and L.S.A. Later he took the D.P.H. Not long after obtaining his medical qualifications Dr. Fletcher was appointed whole-time medical officer of health for the West Lancashire Rural District, and this post he held until 1892 when he was invited to join the medical department of the Local Government Board. This latter appointment he relinquished in 1917 after completing 25 years' service as a medical inspector. After his retirement the post of medical officer of health for the Metropolitan Borough of Hackney became suddenly vacant, and Dr. Fletcher was offered the temporary appointment until the end of the war, or until such time as a suitable permanent officer could be found. He filled this appointment for about two years and performed his duties to the entire satisfaction of the Council and of the staff which served under him. His genial personality was well known throughout a large part of England, especially in the Midlands and the North-Western Districts, in which he conducted many public inquiries, and numerous printed reports by him were published by the Local Government Board. It may be remembered that one of his more recent and interesting reports concerned a joint inquiry made by himself along with a superintending inspector of factories and a senior labour adviser of the Home Office, regarding the alleged danger of the transmission of certain diseases from person to person in weaving sheds by means of what is known among factory workers as "shuttle-kissing."

Fletcher was very popular with his colleagues at Whitehall, as also with the large number of medical men with whom he came in contact in the discharge of his official duties. His kindly disposition and engaging personality often turned opponents into friends. He held strong and pronounced views on politics, but his transparent honesty of purpose and his candour led those who differed from him to listen to his arguments even when expressed in somewhat forcible language. He leaves a widow to mourn his decease.

ARTHUR BOWEN RICHARDS MYERS, M.R.C.S., L.S.A.,

LATE BRIGADE-SURGEON, BRIGADE OF GUARDS.

Colonel A. B. R. Myers, who as army surgeon in the late "sixties" did much work in connexion with disorders of the heart in their relation to the soldier's life, died at his residence, St. George's-road, London, on August 6th, within a few days of the eighty-third anniversary of his birth. Born in 1838 at Tenby, he was educated at St. David's and qualified M.R.C.S. and L.S.A. in 1859. After having acted as prosector to the Royal College of Surgeons of England, he joined the Coldstream Guards as assistant surgeon, and between this time and that of his appointment as surgeon-major in 1883 did most of the cardiac work with which his name is associated. He published in our columns an article on aortic aneurysm, in which he discussed the probable cause of its prevalence in soldiers as compared with sailors and with the male civilian population. He became convinced that the amount of aortic aneurysm in the army might be much diminished by the tunic being fitted more loosely round the neck and upper portion of the chest. "I cannot see," he wrote, "the propriety of making any portion of the soldier's dress so tight as to place him at a great disadvantage in regard to health, comfort, and usefulness, when actively employed, and especially now that the capabilities of each individual are being so much more studied than formerly."

In the following year he obtained the gold medal for his Alexander prize essay on the Ætiology and Prevalence of Diseases of the Heart among Soldiers. He also contributed the article on Exercises to Quain's Dictionary of Medicine, and papers on the heart and on syphilis to the Transactions of various medical societies. Whether or no Myers's theories were based on sound pathology—we have advanced far since then in our diagnostic equipment—his deductions were both wise and fruitful in results for the soldier's health and comfort.

Myers served in the Sudan Expedition of 1885 and was awarded the Suakim medal with clasp; he was promoted brigade-surgeon in 1888, and retired in 1891 with the rank of Brigade-Surgeon Lieutenant-Colonel. In later life he actively associated himself with municipal and church affairs. He was for many years a manager of the metropolitan Asylums Board; he served on the St. George's (Hanover-square) Board of Guardians, presided over a regional committee of the Charity Organisation Society, and sat on the Central (Unemployed) Body for London. This was indeed a useful life.

EDGAR FREEMAN MORRIS, M.R.C.S., L.S.A.

THROUGH the death of Mr. Edgar Freeman Morris at Hereford on July 31st from cerebral hæmorrhage the medical profession of Herefordshire is made the poorer by the loss of an able and conscientious surgeon and an honourable and straightforward colleague. He was a native of Hereford, where he was born in the year 1857. On leaving the Hereford Cathedral school he began his medical studies at University College Hospital, qualifying in 1880 as M.R.C.S. and L.S.A. Shortly afterwards he was associated in practice with his father in Hereford, and was elected a Poor-law medical officer. He joined the staff of the Herefordshire Infirmary in 1892, and at the date of his death was senior honorary consulting surgeon of that institution. He was a pioneer in the county of electrical treatment, and achieved a considerable success in the practice of this branch of medicine. A Conservative in politics and a staunch churchman, acting as vicar's warden over many years, he did not take a very active part in local municipal affairs, though he was a regular attendant on the city bench of magistrates. He was a P.M. of the Vaga Lodge of Freemasons and held provincial rank. He was chairman of the local medical war committee during the war and acted as consulting surgeon to three Red Cross hospitals. He was married twice and is survived by his widow, one son, and two daughters.

Medical News.

UNIVERSITY OF LONDON.—The following have been appointed to act as examiners for the Second Examination for Medical Degrees, Part II., in the Session 1921–22 (chairmen asterisked):—*Anatomy:* *Prof. W. Wright (Lond. Hosp. Med. Coll.) and Prof. E. Barclay-Smith (King's Coll.) together with the External Examiners (Prof. G. Elliot Smith and Dr. W. L. H. Duckworth). *Physiology:* Prof. F. A. Bainbridge (St. Bart.'s Hosp. Med. Sch.) and Prof. H. E. Roaf (Lond. Hosp. Med. Coll.) together with the External Examiners (Prof. J. S. Macdonald and *Prof. M. S. Pembrey). *Pharmacology:* Dr. P. Hamill (St. Bart.'s Hosp. Med. Sch.) and Dr. V. J. Woolley (St. Thomas's Hosp. Med. Sch.) together with the External Examiners (*Prof. F. Ransom and Prof. J. A. Gunn).

Mr. H. J. Waring has been elected chairman of the Brown Animal Sanatory Institution Committee. The Rogers Prize of £100 for 1921 has been awarded to Mr. Lambert Rogers for an essay entitled "The Surgical Treatment of Hyperthyroidism." Applications are invited for the William Julius Mickle Fellowship, of the value of at least £200, which is awarded annually by the Senate to the man or woman who, being resident in London and a graduate of the University, has in the opinion of the Senate done most to advance medical art or science within the preceding five years, and has therein shown conspicuous merit. Applications must reach the Principal Officer of the University not later than the first post on Oct. 1st, 1921. The Senate invite applications for the following readerships:—Readership in Psychology, tenable at King's College (salary £500 a year: latest date of application, Sept. 16th, 1921); Readership in Pathological Chemistry, tenable at University College Hospital Medical School (salary £700 a year: latest date of application, Sept. 15th, 1921). Further particulars may be obtained from the Academic Registrar, University of London, South Kensington, S.W. 7.

The following prizes and certificates were recently presented to successful students of the London Hospital Medical College by Mr. W. M. Pryor, Chairman of the College Board:—

"Price" Entrance Scholarship in Science, £100, R. W. Thomas; "Price" University Scholarship in Anatomy and Physiology, £52 10s., W. R. Brain. Entrance Science Scholarship, £50, W. A. Taylor. Duckworth Nelson Prize in Practical Medicine and Surgery, £10, L. R. Fifield and G. H. E. H. J. Jones (equal, prize divided). Sutton Prize in Pathology, £20, D. S. Russell. Anderson Prizes in Elementary Clinical Medicine, £5, (1) K. E. Tresilian and J. L. Cox, (2) D. Waterfield and W. R. Brain (equal, prizes divided); honorary certificates, N. Gray Hill, F. C. Hunt, L. O. Lindsay, E. G. Snaith, E. W. Morris, M. C. N. Hadley, K. W. Todd and R. M. Morris. Arnold Thompson Prize in Diseases of Children, £15, J. V. Good; honorary certificates, D. J. Cox and D. S. Russell. Buxton Prize in Anatomy and Physiology, £31 10s., H. W. Taylor and K. W. Heritage (equal, prize divided); honorary certificates, F. B. Byrom and D. Frost. Letheby Prizes, (1) Organic Chemistry, £15, W. A. Taylor; honorary certificates, R. W. Thomas, C. P. Donnison, J. T. Fathi and E. C. Hudson; (2) Chemical Pathology, £10, R. T. Brain. *Clinical Medicine*, £20 Prize, G. H. E. H. J. Jones; honorary certificates, M. E. Kennedy, L. R. Fifield and D. J. Fox. *Clinical Surgery*, £20 Prize, G. H. E. H. J. Jones; honorary certificate, L. R. Fifield. *Clinical Obstetrics and Gynæcology*, £20 Prize, D. S. Russell and C. S. Cloake (equal, prize divided); honorary certificate H. R. Ashton. *Elementary Clinical Surgery*, £5 Prizes, (1) L. R. Fifield, (2) A. Barker, (3) W. R. Brain and (4) S. A. Grant; honorary certificates, F. H. Mather, C. R. McClure and R. M. Morris. *Minor Surgery*, £5 Prizes, (1) M. F. B. Lynch, (2) G. King; honorary certificates, E. C. Hudson and D. J. Martin. *Practical Anatomy*, £5 Prizes, (1) F. Byrom, (2) F. C. Nicklin.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At the recent election of officers by the President and Council, Sir Humphry Rolleston and Dr. Horace G. Turney were appointed to take the place of Dr. Hector Mackenzie and Sir John Rose Bradford as Censors; Dr. G. F. Still to take the place of Dr. A. F. Voelcker on the Library Committee; Dr. W. Aldren Turner, Dr. H. Morley Fletcher, Dr. A. P. Beddard, and Dr. Charles Bolton to fill vacancies as Examiners in Medicine; Dr. J. P. Hedley, Dr. T. G. Stevens, and Dr. J. D. Barris to fill vacancies as Examiners in Midwifery. Dr. C. R. Box and Dr. Hugh Thursfield were appointed Examiners for the Murchison Scholarship.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination held from July 5th to 25th the following candidates were approved in the undermentioned subjects, but are not eligible for diplomas:—

Medicine.—Edith I. L. Abbott, Univ. Coll.; M. T. Ahmed, Guy's; N. A. Aiengar, Bombay and Guy's; O. A. Akjaly, Liverpool; Charlotte K. J. Almond, King's Coll.; S.

Annecke, Guy's; Ruth M. Arkwright and Marjorie H. S. Auden, St. Mary's; Joyce Rayner Batten, Univ. Coll.; D. P. Bhargava, Lucknow and London; E. E. L. Burnier, Lausanne; A. E. Collie, Middlesex; M. Critchley, Bristol; J. G. D. Currie, Cambridge and St. Thomas's; Muriel A. M. Davies, St. George's; A. H. Douthwaite, Guy's; Emmie D. Fenwick, St. Mary's; E. C. H. Foreman, Univ. Coll.; J. E. Gardner, St. Bart.'s; R. Goodman, Charing Cross; Doris M. Hammond and Kathleen M. D. Harding, St. Mary's; Margaret Haywood, Royal Free; B. Homa, St. Bart.'s; Isobel E. Imison, Liverpool; Eva M. Johnson, Univ. Coll; R. J. Jones, Liverpool; R. G. Karn, Univ. Coll.; J. Kindness, Charing Cross; Kathleen H. B. King, Royal Free; F. Knoyle, Middlesex; A. H. Kretchmar, St. Bart.'s; Geraldine N. Longford, St. Mary's; J. A. Mackay-Ross, St. Bart.'s; Y. Maximos, Middlesex; O. E. J. McOustra, Univ. Coll.; Iva Clare M. Molony, St. Mary's; J. B. G. Muir, Middlesex; H. A. Nathan, Charing Cross; C. P. Oliver, St. Thomas's; F. A. Pickworth, Charing Cross; Kathleen M. Platt, Liverpool; F. W. M. Pratt, Durham and St. George's; J. A. Prichard, Bristol; A. R. Rutnam, Middlesex; F. L. Rayner, Guy's; T. R. Rees, St. Bart.'s Hilda E. Reynolds, Bristol; E. H. Richards, Guy's; Effie F. A. Samter, Manchester; Margaret C. Scrace, Royal Free; Creina Shepherd, King's Coll.; A. I. Solberg, Leeds; S. Suvansa, St. Bart.'s; R. O. Swaine, Middlesex; N. S. Taylor, Liverpool; Norah Walden, Royal Free; J. R. Wright, Manchester; and Eva Young, Royal Free.

Midwifery.—Edith I. L. Abbott, Univ. Coll.; M. Ahmad; King's Coll.; M. T. Ahmed, Guy's; Marjorie H. S. Auden, St. Mary's; S. Annecke, Guy's; Helen R. Ashton, London; J. R. Azurdia, Liverpool; Joyce R. Batten, Univ. Coll.; A. O. Bekenn, Birmingham; H. S. Bell, St. Bart.'s; D. P. Bhargava, Lucknow and London; S. Bloom, St. Bart.'s; A. M. F. Browne, St. Mary's; E. E. L. Burnier, Lausanne; A. W. Carleton, Middlesex; W. R. Carling, Cambridge and Guy's; K. A. Carter, Univ. Coll.; N. E. D. Cartledge, St. Bart.'s; T. H. Cathrall, Oxford and London; H. R. Chibber, Liverpool; T. J. Clayton, Charing Cross; W. L. S. Cox, Univ. Coll.; W. Dabbs, Birmingham; Edith M. P. Davies, Royal Free; T. H. R. Davies, Univ. Coll.; Enid M. Dixon, London; A. H. Douthwaite, Guy's; Alice E. Dove, Univ. Coll.; H. O. Eksteen and M. A. El Biblawi, Guy's; Mary C. Elliot, Univ. Coll; C. E. Fenton and L. R. Fifield, London; Lydia S. Fuller-Maitland, St. Mary's; J. E. Gardner, St. Bart.'s; A. A. Gemmell, Cambridge and Liverpool; T. J. E. Gittins, Birmingham; Louisa P. Gordon, King's Coll; E. H. Griffin, Guy's; H. G. Hall, Univ. Coll.; B. D. Hughes, St. Bart.'s; Isabel E. Imison, Liverpool; J. Jackson, St. Bart.'s; E. R. Jagger, Manchester; Eva M. Johnson, Univ. Coll.; E. M. Jones, St. Bart.'s; H. B. Jones, Guy's; R. J. Jones, Liverpool; A. T. L. Kingdon, Univ. Coll.; A. H. Kretchmar, St. Bart.'s; F. I. Labieb and E. G. Lewis, Charing Cross; E. V. Lupprian, St. Mary's; W. S. McClinton, Toronto and Charing Cross; D. C. McIntosh, Univ. Coll.; D. W. McKay, Toronto; F. H. Mather, London; F. R. L. Miller, St. Bart.'s; C. Minasian, St. Mary's; W. E. M. Mitchell, H. W. Needham, and G. J. V. Nelken, St. Bart.'s; K. Olaisson, Iceland and St. Bart.'s; T. C. Oliver, London; C. L. Ousep, Madras; Hilda W. Page, Univ. Coll.; H. M. Palmer, Cambridge and St. Thomas's; J. N. D. Paulson and Evelyn V. Pilley, St. Mary's; Edith C. Phelps and Betsy Porter, Royal Free; Gladys H. Randall, Charing Cross; E. H. Richards, Guy's; H. R. Rishworth, Charing Cross; A. E. Roche, Cambridge and St. Bart.'s; A. T. Rogers, Guy's; Dorothy W. Roughton, London; A. H. M. Sabry, Charing Cross; Elaine M. K. Salmond, Royal Free; S. Sandler, London; Norah B. A. Sankey, St. Mary's; Ena M. Sansom, Royal Free; C. Satyaraju, Madras and London; L. Segal, Charing Cross; C. D. Shapland, Univ. Coll.; N. F. Shaw, Middlesex; Vera E. Shaw, St. Mary's; J. W. Sinclair, Toronto; E. G. Snaith and J. Solomonoff, London; Mary A. E. Somers, Bristol; Eleanor C. E. Stone, St. Mary's; H. A. Surial, Birmingham; M. L. Sutcliffe, Univ. Coll.; Annie D. Symons, Royal Free; L. M. Teuten, St. Mary's; W. Thomas, London; W. T. de V. Thomson, Liverpool; P. H. T. Thorlakson, Manitoba; H. Tothill, St. Bart.'s; A. Vasudev, London; A. H. C. Visick, St. Bart.'s; K. L. Ward, London; B. G. Watson, Birmingham; J. L. Wesley-Smith, Leeds; Hilda M. Whitfield, Univ. Coll.; C. E. Whitting, Cambridge and St. Thomas's; Catherine M. Williams, L. S. Woolf and A. D. Wright, St. Mary's; and Eva Young, Royal Free.

Surgery.—Helen R. Ashton, London; T. J. D. Atteridge and S. Bloom, St. Bart.'s; J. G. B. Brass, London; A. W. Carleton, Middlesex; Linda Catmur, London; H. O. Eksteen, Guy's; L. R. Fifield, London; M. Garden, Univ. Coll.; Kate Glyn-Jones, London; C. M. Gwillim, St. Bart.'s; F. J. S. Hall, St. Mary's; Margaret Haywood, Royal Free; W. Laing, St. Bart.'s; I. B. McCann, Guy's; D. W. McKay, Toronto; Frances M. Margerison, Charing Cross; G. J. V. Nelken, St. Bart.'s; Enid M. Powell, Charing Cross; J. J. Rowlands, London; Elaine M. K. Salmond, Royal Free; A. I. Solberg, Leeds; D. D. C. Thomson, London; Helen C. Tompson and Norah Walden, Royal Free; C. E. Whitting, Cambridge and St. Thomas's; and J. R. Wright, Manchester.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—Mr. R. A. Hill has been elected to an Entrance Arts Scholarship (1921, value £25), and Mr. J. M. Ashton has been elected to an Entrance Science Scholarship (1921, value £150).

WESTMINSTER HOSPITAL: ANNUAL DINNER.—The annual dinner for past and present students of Westminster Hospital will be held on Friday, Oct. 7th, at the Great Central Hotel. Sir Charles Ryall will occupy the chair.

DONATIONS AND BEQUESTS.—Ancoats Hospital, Manchester, has received sums amounting to over £930, including £637, the proceeds of St. Jerome's Church (Ardwick) Bazaar, and £124, the proceeds of a swimming gala held by the Manchester Victoria Swimming and Life-Saving Society. The board of management of the Royal Infirmary, Manchester, in addition to a number of new annual subscriptions and increased annual subscriptions, acknowledge the receipt from various donors of £203.

MANCHESTER: PRECAUTIONS AGAINST INFANTILE DIARRHŒA.—The Manchester Health Authority has issued a timely warning to parents of the dangers of infantile diarrhœa, particularly at this time of year and with the coming of rain after the long spell of hot weather. The local by-laws as to the removal of breeding places of the common fly in manure heaps are systematically and efficiently enforced; all stables are inspected, and arrangements made for the removal of refuse at least once a week, the incubation of flies being thus cut short. Householders are asked to assist in the work by burning all refuse and maintaining a high level of cleanliness on their premises. It is advised that all food and milk be protected from contact with and contamination by flies or germ-breeding dust; that the soiled garments of infants be placed at once in a weak disinfectant solution of chloride of lime; and that infants at the breast should, if possible, not be weaned during the hot months. The importance of securing immediate medical attention for a child attacked by diarrhœa is emphasised; if a private medical man is not available the child should be taken to one of the widely-scattered child-welfare centres. Steps have been taken to supply each householder with cards for notification, and the arrangements are so complete that public coöperation should secure effectual treatment of any outbreak which may occur.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The annual meeting of the Association was held on July 12th to 14th, at the home of the Royal Society of Medicine and at the Springfield Mental Hospital, Tooting. The proceedings opened with the business meeting, under the presidency of Dr. W. F. Menzies, when a sincere tribute was paid to the lifelong work in the specialty of the recently deceased Sir George Savage; and a vote of condolence with the members of his family was passed by members rising in their places. The remaining sessions were presided over by Dr. C. Hubert Bond, the new President.

A large number of members were entertained at luncheon by Mr. A. H. Trevor (a legal member of the Board of Control) and the dinner was made memorable by the attendance of the Lord Chancellor, the Minister of Health, and a really representative gathering of both professions. Both Lord Birkenhead and Sir Alfred Mond assured the gathering of their sympathy with the aspirations of those concerned with the care of the mentally afflicted, and of their readiness to do their best to bring about the realisation of their aims. The retiring President and officers were cordially thanked. The new President's address was then delivered, and appears in this issue of THE LANCET. Sir Robert Armstrong-Jones, in proposing a cordial vote of thanks to Dr. Bond for his address, referred to the great help given to psychological medicine during the war by Sir Alfred Keogh, and to the increasing attention being given to borderline cases of mental disorder. Dr. J. G. Soutar seconded, and alluded to the enthusiastic work done for the Association by Dr. Bond when he was its general secretary. The vote was carried by acclamation.

Among the subjects on which papers were contributed, practically all followed by long discussions, were:—Dr. P. W. Bedford: The Goldsol Test in Mental Disease. Dr. Edwin Goodall: Demonstration of X Ray Photography of Barium Meals in Cases of Dementia Præcox. Dr. E. Goodall and Dr. H. A. Scholberg: A Note on the Diastase-Contents of the Urine in 120 Cases of Mental Disorder. Dr. T. S. Good: The Oxford Clinic (followed by a memorable speech by Prof. Robertson, Edinburgh). Dr. C. S. Myers: Psychological Medicine in Relation to Industry. Dr. Edward Mapother and Dr. J. E. Martin: Recurrent Phantasies of Infancy and Childhood as a Source of Delusions. Dr. Wilfred Caroleu: Legislative Restrictions in Connexion with the Treatment of Incipient Insanity. Dr. G. A. Auden: Mental Defect and the School Medical Service. Dr. Henry Devine: Expatiation Mechanism in a Case of Schizophrenia. Dr. Bernard Hart: The Problem of Prevention in the War Psycho-neuroses. Dr. W. Ford Robertson: Chronic Bacterial Infections in Dementia Præcox. Dr. T. Beaton: Change of Phase in the Psychoses. Dr. Henri Colin (Paris): Mental Hygiene and Prophylaxy. Dr. J. T. Dunstan: The Feeble-Minded Problem in South Africa. Prof. William Brown: Psychology and Psychotherapy. Friday was devoted to visits to various mental hospitals, and the meeting at the Springfield Hospital was followed by a garden party.

THE Rev. James Marchant, Director and Secretary of the National Council of Public Morals for Great and Greater Britain, has received the honour of K.B.E.

MAILS for Tristan da Cunha for despatch by the s.s. *Quest*, R.Y.S., which is to convey Sir Ernest Shackleton and his party on their Antarctic Expedition, will be accepted in London up to August 23rd.

THE DENTISTS ACT.—The Royal Assent to the Dentists Act, 1921, has been given, but no registration under its provisions can be effected until the Dental Board has been constituted, which may not be until some months hence.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The winter session will open on Tuesday, Oct. 4th, when the introductory address will be delivered by Mr. G. Gordon-Taylor, at 3 P.M., after which the prizes gained during the previous year will be distributed by Sir John Bland-Sutton. The annual dinner will be held at 7.30 on the same evening at the Trocadero, Mr. Comyns Berkeley presiding.

EDINBURGH POST-GRADUATE COURSES, 1921.—Post-graduate courses in connexion with the University and Royal Colleges will be held this year from August 14th to Sept. 9th inclusive, and will comprise (1) a general medical course and (2) a general surgical course. The composite fee for each course will be ten guineas for the four weeks, or six guineas for either the first or second fortnight. The medical course will include lecture-demonstrations, and, where possible, practical instruction on medical anatomy, medical side-room work, examination of the blood, X ray and electrical therapy, morbid anatomy and post-mortems; clinical instruction in medicine, diseases of children, diseases of the skin, and infectious diseases; and special instruction in the methods of examination of the nervous, circulatory, respiratory, alimentary, and renal systems. The surgical course will include lecture-demonstrations on surgical anatomy, surgical pathology, and surgical X ray diagnosis; clinical instruction in surgery at the Royal Infirmary and Royal Hospital for Sick Children; clinical instruction in venereal diseases; surgical out-patients; surgical and gynæcological operations; and special instruction in abdominal and renal surgery and the surgery of the mamma. A series of special lectures, open to all graduates, will be delivered thrice weekly during the month, on subjects of general medical and surgical interest. Further particulars of the courses may be had on application to the Hon. Secretary, Post-graduate Courses in Medicine, University New Buildings, Edinburgh.

COUNTY OF LONDON PANEL COMMITTEE.—The recently concluded course of post-graduate lecture demonstrations in general medicine at Charing Cross Hospital having proved a great success, the Panel Committee are encouraged to arrange further courses during the coming autumn. The subject to be dealt with will depend upon the choice expressed by the majority of those joining, and will be either general medicine, general surgery, or midwifery and gynæcology. If sufficient names are obtained two or more courses may be arranged. The fee for any course will be 3 guineas, payable in advance to the Secretary of the Panel Committee. Practitioners desirous of joining should notify the Secretary of the Panel Committee as soon as possible, and will assist if they will enter for more than one course, signifying the course for which they have most preference.

Charing Cross Hospital.—A course of ten lecture demonstrations in clinical pathology will be held in the Institute of Pathology, Charing Cross Hospital, during September, October, and November, 1921. Lecturers: Dr. W. M. C. Topley, director of the institute, and Mr. Cole, university lecturer in biochemistry, Cambridge University. Fee for the course, 3 guineas, payable in advance to the Secretary of the Panel Committee.

St. Thomas's Hospital.—A further course on venereal diseases will be held during September, October, and November, 1921. Colonel Harrison, D.S.O., will give the lectures and supervise the practical teaching. Fee for the course, 3 guineas, payable in advance to the Secretary of the Panel Committee.

South-Eastern and North-Eastern Fever Hospitals.—The Panel Committee have arranged with the Metropolitan Asylums Board, for two courses of clinical demonstrations on the Diagnosis of Fevers and Treatment of Diphtheria, to be held (1) at the South-Eastern Fever Hospital, Avonley-road, New Cross; (2) at the North-Eastern Fever Hospital, St. Ann's-road, South Tottenham, N. The courses will commence on or about September 29th, and will consist of six demonstrations with cases. Each class will consist of not more than 12 members. Practitioners desirous of joining should make early application; the fee for each course will be £1 12*s.*, payable in advance to the Secretary of the Panel Committee.

UNITED STATES PUBLIC HEALTH SERVICE.—The hospital programme of the United States Public Health Service is being rapidly developed; nine new hospitals, which will accommodate more than 3000 patients, will shortly be ready for use. Three of these, in Iowa, Montana, and Oregon, with space for about 500 patients, should be in operation within two months. The Colfax hotel, at Colfax, Iowa, a building with over 130 acres of grounds, is being fitted to receive 200 patients. The Army hospital at Fort William Henry Harrison, near Helena, Montana, will be opened with 100 general patients, but may later be greatly expanded. It is hoped to open the hospital at Dawson Springs, near Hopkinsville, Kentucky, with 500 tuberculosis patients within five months. The Hahnemann Hospital at Portland, Oregon, for 164 general patients by July 1st, and the Speedway Hospital, at Chicago, for 1000 general patients, have already been completed. Of three Army forts handed over by Congress to the Health Service, that at Fort Walla Walla will shelter 284 tuberculosis patients; Forts McKenzie (Wyoming) and Roots (Arkansas) are each planned to accommodate more than 600 cases of nervous and mental disease. A naval station at Gulfport, Mississippi, has just been taken over from the Navy, and will be utilised as a hospital or home either by the Public Health Service or by some other branch of the Government.

LEEDS WORKPEOPLE'S HOSPITAL FUND.—In 1887 an arrangement was made between this association and the charitable institutions of the city whereby the latter abstained from approaching the wage earners for direct support to the charities, but relied upon the systematic collection by a committee of workpeople of weekly subscriptions from men, women, and children in receipt of wages. Until recently the amount subscribed was one penny per week from each man, and one halfpenny from each woman or child. During the last 12 months an appeal has been made to the workpeople to double their subscriptions; additional collections are now made in the various clubs and public houses of the city and in some of the elementary schools; ward competitions and the annual gala also bring in varying sums. The total income for the year covered by the annual report amounted to £39,739, a sum exceeding that subscribed in any previous year, showing an actual increase over the past year of £13,931. The Fund makes grants to the various medical charities of the city, the General Infirmary always receiving the largest amount, which this year reached the sum of £20,000. The Leeds Public Dispensary receives £3000; the Hospital for Women, £2500; the Maternity Hospital, £1000; the Jewish Hospital and District Nursing Home, £1000; and smaller institutions, £75 to £50. In addition to the provision of money for the medical charities the Fund has purchased, and now administers, three convalescent hospitals, one for men and two for women. The benefits of these homes are limited to the subscribers to the Fund, but admission to them is not regarded as a right of any subscriber, applications being carefully dealt with at a weekly meeting of the committee.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 15th.—12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Simmonds: Visit to Surgical Wards. 4.30 P.M., Dr. Paterson: Enlargements of the Abdomen.

TUESDAY.—2 P.M., Dr. Burrell: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 4.30 P.M., Lecture:—Dr. Burnford: Clinical Medicine (I.).

WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 2 P.M., Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department. Mr. Addison: Operations. 4.30 P.M., Lecture:—Mr. Gibb: Ulceration of the Cornea (I.).

THURSDAY.—11.30 A.M., Obstetrical Registrar: Gynæcological Demonstration. 2 P.M., Mr. Simmonds: Orthopædic Department. Mr. D. Armour: Operations. 4.30 P.M., Lecture:—Mr. MacDonald: Enlarged Prostate.

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 4.30 P.M., Lecture:—Mr. Simmonds: Surgical Emergencies (I.).

SATURDAY.—10 A.M., Dr. Burnford: Visit to Medical Wards. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-Patient, Out-patient Clinics and Operations.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, AUGUST 2ND.

Milk for Tuberculous Persons.

Mr. THOMAS GRIFFITHS asked the Minister of Health whether he was aware that the Hertfordshire County Council proposed to provide milk for tuberculous persons and that the provision made would allow for a supply of milk for 17 persons in addition to the supply provided by the insurance committee for 153 insured persons; whether the limitation of the supply to persons with tubercle bacilli in the sputum excluded many persons, especially children, for whom milk was necessary; and whether, in view of the inadequacy of one pint of milk per day for the purpose, he would consider, in the interests of public health, withdrawing the regulation which limited the expenditure of local authorities, if they were to receive Government aid, to £2 per 1000 inhabitants.—Sir A. MOND replied: I understand that the scheme of the county council provides for the supply of milk to about 200 tuberculous persons at any one time and that this is the maximum provision which can be made within the limits of an expenditure of £2 per annum per 1000 inhabitants of the county. The limitation of the supply to persons with tubercle bacilli in the sputum does not apply to cases of non-pulmonary tuberculosis, the majority of which are children. The Exchequer grant allows on the average an expenditure of double that hitherto incurred by the insurance committees. I can hold out no hope of an increase in the amount of the grant.

WEDNESDAY, AUGUST 3RD.

Opium Cultivation in China.

Mr. STEWART asked the Under-Secretary of State for Foreign Affairs whether the Government could give any information as to the position of opium in China at the present time; whether the Chinese government undertook to put down the cultivation of opium in China when we gave up the export from India; whether it was the fact that great cultivation was being carried on in many Chinese provinces and that smuggling of native opium into Shanghai and Hong-Kong was taking place; and what the Government proposed to do to get China to carry out her treaty obligations.—Mr. HARMSWORTH replied: Papers are now being prepared for submission to Parliament showing the present position of opium cultivation in China. It is the case that China undertook to put down cultivation as the condition on which the export of opium from India was stopped. At that time opium-growing in China seemed to have been satisfactorily suppressed, but I regret to say that recent reports indicate a marked revival in certain provinces and there is evidence of smuggling of Chinese opium into Hong-Kong on a considerable scale. No doubt it is also smuggled into Shanghai. Strong protests have been repeatedly addressed to the Chinese Government, but have hitherto remained entirely unheeded. The hon. Member is doubtless aware that the League of Nations are now actively interesting themselves in the whole opium question.—Sir J. D. REES: Now that the real facts are known is it not time to consider a revision of our policy rather than run the risk of irritating China by trying to force her to carry out what she is obviously unable to carry out?—Mr. HARMSWORTH: I hope the policy will not be changed.

Necessity for Better Rural Housing.

Mr. LAMBERT asked the Minister of Health for what reason he was giving a precedence to large industrial areas over rural areas in the Government housing scheme, seeing that an increase of the rural population would ensure a greater supply of home-produced food being available for the inhabitants of Great Britain.—Sir A. MOND replied: It has been necessary to consider the relative claims of rural and industrial areas to the limited house provision at my disposal, and I think it will be generally recognised that more overcrowding prevails and that other health conditions are more unfavourable in large industrial areas than in rural areas, and while I am aware that there is a deficiency of houses in rural areas I have had under the circumstances to decide to give precedence to industrial areas.

Tuberculosis Hospital at Boston.

Mr. ROYCE asked the Minister of Health whether, in view of the extreme urgency for local treatment of patients, a sanction given by the Ministry to the Holland County Council to purchase Norton House, Boston, for the purpose of a tuberculosis hospital was afterwards withdrawn; whether he would give the reason for the Ministry's action; whether the contract for the purchase was completed after the approval conveyed by the Ministry's letter of May 10th last; whether, in consequence, the council was legally bound to go on with the purchase; and what steps, if any, he proposed to take in these circumstances.—Sir A. MOND replied: In view of the general instructions of the Government as to economy in public expenditure my Department has been compelled to suspend various public health schemes involving capital expenditure where an authority was not definitely committed. In the particular case referred to sanction to a purchase which had previously been given was withdrawn because on the information in the possession of the Department it appeared that the authority was not definitely committed to the purchase. It has now been ascertained that the authority is committed and the purchase will accordingly be completed.

Seamen's Insurance.

Major HENDERSON asked the Minister of Health whether he was aware that the Controller of Health Insurance promised a deputation which waited on him on July 6th that he would summon an early conference of all interests concerned to consider the advisability of improving the system of seamen's insurance; and what steps, if any, had been taken towards this end.—Sir A. MOND replied: The matter to which the hon. Member refers is now being investigated by an Office Committee appointed for the purpose. Steps will be taken at the earliest possible date to obtain the views of all interests concerned.

Pensions Surgical Hospital at Shepherd's Bush.

Major COHEN asked the Minister of Health whether it was his intention to permit the return to the Hammersmith board of guardians of the infirmary and workhouse in Ducane-road, Shepherd's Bush, which was at present being used as a special surgical hospital by the Ministry of Pensions; and whether he was aware that the Red Cross spent over £16,000 on rendering this hospital suitable for special types of cases, and that at present there was no other suitable accommodation to be obtained elsewhere.—Sir A. MOND replied: I have already written to the guardians urging them to agree to an extension of the tenancy of this institution by the Ministry of Pensions.

Licensing (No. 2) Bill.

The Licensing (No. 2) Bill as amended in Standing Committee was considered on Report, and agreed to. The Bill was read a third time and passed.

THURSDAY, AUGUST 4TH.

Medical Officers of Pensions Ministry.

Mr. HAYWARD asked the Minister of Pensions how many doctors on the staff of or employed by the Ministry, other than doctors serving part-time on medical boards, were engaged on administrative duties, and how many were engaged on the actual work of attending to patients; and what were the total annual salaries of the doctors engaged under each category, respectively.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: 317 whole-time medical officers are employed at the Ministry, partly or solely on administrative duties. Their annual salaries inclusive of all emoluments amount in the aggregate to £316,255. Of these, however, 75, while holding administrative posts, are engaged for a large part of their time in visiting or examining and arranging for the treatment of pensioners, and some considerable proportion of them are, and have to be, officers with specialist qualifications. 300 whole-time doctors are employed solely on the treatment of pensioners. Their annual salaries, inclusive of all emoluments, amount in the aggregate to £220,108. In addition, the Ministry utilises the part-time services of 653 medical officers and specialists in connexion with treatment at hospitals, limb-fitting centres, and clinics, at a total annual cost of £210,558. There are also 1717 medical referees paid on a fee basis who are employed in examining and certifying patients for treatment.

Cost of Health Insurance to the Workman.

Sir ROBERT CLOUGH asked the Minister of Labour whether he could state the cost per man per week of health and unemployment insurance to the workman, to the employer, and to the State respectively?—Dr. MACNAMARA replied: The normal weekly contributions from employers and employed for Health Insurance and Unemployment Insurance, where payable, are at present as follows:—

	Health.	Unemployment.	Total.
In respect of men:			
Employers ..	5d. ..	8d. ..	1s. 1d.
Employed ..	5d. ..	7d. ..	1s.
In respect of women:			
Employers ..	5d. ..	7d. ..	1s.
Employed ..	4d. ..	6d. ..	10d.

In certain cases where low wages are paid, the employer's contribution for Health Insurance is increased and that from the employed is correspondingly reduced. Unemployment Insurance contributions are payable at half the above

rates in respect of boys and girls between the ages of 16 and 18. The State does not make a weekly contribution to Health Insurance but provides two-ninths of the costs of benefit and the administration thereof. The State contribution to Unemployment Insurance is one-fourth of the contributions from employers and employed, that is, 3¾d. weekly in respect of men and 3¼d. weekly in respect of women.

Staff of Pensions Ministry Hospitals.

Mr. HAYWARD asked the Minister of Pensions what was the total number of patients and the total number of staff (including administrative, medical and nursing staff, and all other employees), respectively, employed at each of the following hospitals: Shepherd's Bush, Netley, Orpington, Ruskin Park, and Bellahouston.—Major TRYON supplied the following printed statement:—

	Staff.*	In-patients.	Out-patients.
Shepherd's Bush	.. 442 (*a*)	.. 543	.. 511
Netley ..	.. 109 (*b*)	.. 191	.. 90
Orpington ..	.. 458 (*c*)	.. 923	.. 2
Ruskin Park	.. 247 (*d*)	.. 327	.. 436
Bellahouston	.. 344 (*e*)	.. 717	.. 1168

* Including part-time medical officers.
(*a*) Includes 265 domestic and lay assistants.
(*b*) ,, 61 ,, ,, ,,
(*c*) ,, 362 ,, ,, ,,
(*d*) ,, 136 ,, ,, ,,
(*e*) ,, 177 ,, ,, ,,

I may add that the proportion of staff to patients varies with the type of case treated in the hospital and with the structural arrangements of the hospital.

FRIDAY, AUGUST 5TH.

Criminal Law Amendment Bill.

The House considered the Criminal Law Amendment Bill on Report.

Mr. MACQUISTEN moved a new clause providing that "any act of gross indecency between female persons shall be a misdemeanour and punishable in the same manner as any such act committed by male persons under Section 11 of the Criminal Law Amendment Act, 1885." This clause, he said, was one which was long overdue in the criminal code of the country. He had had professional experience of calamitous cases due to gross practices indulged in of this kind. These moral weaknesses dated back to the very origin of history, and when they grew and became prevalent in any nation or in any country it was the beginning of the nation's downfall. The falling away of feminine morality was to a large extent the cause of the destruction of the early Grecian civilisation, and still more the cause of the downfall of the Roman Empire. One could not go into the details; it was more a matter for medical science and for neurologists, but all lawyers who had had criminal and divorce practice knew that there was in modern social life an undercurrent of dreadful degradation unchecked and uninterfered with. He believed if the punishment of the law were imposed upon it it would go a long way to check and even to eradicate it. Neurologists would tell them how largely the spread of the use of cocaine and other drugs was due to the dreadful nerve deterioration which beset many of the idle part of the population. He had seen happy homes wrecked in this way. Only that night he had been speaking to a man, whom he had known for a comparatively short time, and who told him how his home had been ruined by the wiles of an abandoned woman who had pursued his wife, and later some other misconduct happened with a male person which enabled him to get a divorce. This was a matter with which it was necessary to deal on account of its civil and sociological effects.

Major FARQUHARSON said that on behalf of those who were promoting the Bill he was very pleased to accept this new clause.

Colonel WEDGWOOD could not believe that the House would pass the clause, which would advertise a beastly subject. To call in the policeman to suppress a vice was the best way to encourage the knowledge of that vice and the spread of it. On the other hand it would lead to endless blackmail.

Sir E. WILD said that if hon. Members were to consult any neurologist, any great doctor who dealt with nerve diseases, they would be told that this was a very prevalent practice. He had the authority of one of the greatest nerve specialists for saying that no week passed that some unfortunate girl did not confess to him that she owed the breakdown of her nerves to the fact that she had been tampered with by a member of her own sex. He (Sir E. Wild) had consulted many asylum doctors and they assured him that the asylums were largely peopled by nymphomaniacs and people who indulged in this vice. He had also consulted the criminologists and they said that these practices took place. This vice did exist, and it sapped the fundamental institutions of society. It stopped childbirth, because it was a well-known fact that any woman who indulged in this vice would have nothing to do with the other sex. It debauched young girls and produced neurasthenia and insanity.

On a division the clause was read a second time and added to the Bill by 148 votes to 53.

Sir R. NEWMAN moved to leave out the provision in Clause 1 (consent of young person to be no defence) to the effect that the party consenting should be guilty of a misdemeanour if he or she was of the age of 15 years. He urged that this provision would make it impossible to get a conviction, because it was really on the evidence of the child herself that in nine cases out of ten the case against the prisoner mainly depended.—Mr. HOHLER seconded. On a division the amendment was negatived by 167 votes to 27.

Sir E. WILD moved to leave out Clause 2 (removal of defence of reasonable belief as to age of girl). With all the desire in the world to promote morality and protect young people against themselves it was not fair that this only defence a man had should be taken from him.—Major HAMILTON seconded.

Mr. SHORTT (Home Secretary) hoped the House would not accept the amendment.—Major FARQUHARSON, speaking as a physician, appealed to the House to let the clause stand as a mere physical protection to the race.—On a division the amendment was negatived by 103 votes to 49.

The Report stage of the Bill was concluded. The motion for the third reading of the Bill was carried by 101 votes to 8.

TUESDAY, AUGUST 9TH.

Poison Antidotes Bill.

Brigadier-General SURTEES introduced a Bill to provide that the receptacle of each poison sold by retail shall bear a printed description of an antidote for that poison. The Bill was read a first time.

Overcrowding at Dartmouth.

Mr. RAWLINSON asked the Financial Secretary to the Admiralty whether the medical advisers of the Admiralty early in the year warned the Admiralty of the risks of overcrowding involved in the increased number of cadets at Dartmouth; whether the cadets were now sleeping in dormitories with less than 3 feet between bed and bed; whether some of the beds were directly under the windows and on more than one occasion the beds had been soaked with rain; whether the cubic space of air allowed per cadet was less than the space insisted on in industrial schools; and whether he would reduce the numbers at Dartmouth next term, either by sending more cadets to sea or otherwise.—Mr. AMERY replied: As regards the first part of the question, I would refer to the replies on the subject already given to the hon. Member on March 23rd and April 5th respectively. The answer to the second part of the question is in the affirmative. As regards the third part, owing to the construction of the dormitories and the large amount of window space, it has been found necessary for a proportion of the beds to be placed to a greater or lesser degree directly under the windows, but the bottom halves of the windows can be easily closed in bad weather, leaving fanlights in the upper part open for ventilation, and, if necessary, the windows on one side of the building can be closed entirely. No reports have been made to the authorities at the College of any beds being wetted by rain. With regard to the fourth and fifth parts of the question, the amount of cubic space of air provided during the past term per cadet is more than double that insisted upon by the Home Office in the case of industrial schools, and under the arrangements already made the number of cadets at Dartmouth next term will be reduced to 540, as against 586 during the present term. This number will be further reduced in January next to about 495. I may add that, during the present term, there has been an almost complete absence of sickness amongst the cadets.

CORONERS' INQUESTS IN IRELAND.—For some months past the holding of coroners' inquests has been prohibited in 24 counties and four county boroughs in Ireland. The absolute prohibition was revoked last week, and a fresh order was issued which permits coroners and juries to function "in any case in which the holding of an inquest may be authorised by the competent military authority." Our correspondent writes: It would have been wiser to maintain an absolute edict against the functioning of coroners, until the prohibition can be completely removed. The delegation of certain inquiries to a coroner and jury, and the choosing of others for military investigation, whether public or secret, is sure to arouse suspicion.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Wednesday morning of each week, such information for gratuitous publication.*

KENNEDY, W. N. W., M.D.Edin., D.P.H., has been appointed Medical Officer of Health and Medical Superintendent of the Child Welfare Scheme for the Burgh of Galashiels.

St. Thomas's Hospital: H. L. SLAUGHTER, M.R.C.S., L.R.C.P., D. MCCLEAN, M.R.C.S., L.R.C.P., H. L. WILLEY, M.R.C.S., L.R.C.P., K. H. TALLERMAN, M.C., M.R.C.S., L.R.C.P., F. A. PHILLIPPS, M.B., B.Ch. Cantab, M.R.C.S., L.R.C.P., E. M. BURRELL, M.R.C.S., L.R.C.P., S. HARTLEY, M.C., M.R.C.S., L.R.C.P., and J. SPIRA, M.R.C.S., L.R.C.P., Casualty Officers and Resident Anæsthetists; C. K. J. HAMILTON, M.C., M.B., B.Ch. Oxon., M.R.C.S., L.R.C.P., E. D. GRANGER, M.B., B.S. Lond., M.R.C.S., L.R.C.P., A. D. WHITELAW, M.R.C.S., L.R.C.P., and G. A. BACK, M.R.C.S., L.R.C.P., Resident House Physicians; G. M. KENDALL, M.B. Cantab., M.R.C.S., L.R.C.P., Resident House Physician for Children; G. D. C. TRACY, M.R.C.S., L.R.C.P., P. T. LIANG, B.Ch. Cantab., M.R.C.S., L.R.C.P., D.T.M., S. H. G. HUMFREY, M.R.C.S., L.R.C.P., and F. V. SQUIRES, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., Resident House Surgeons: E. P. BROCKMAN, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., Resident Orthopædic House Surgeon; W. A. LOW, M.C., M.R.C.S., L.R.C.P., Senior Obstetric House Physician; L. B. MAXWELL, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., Junior Obstetric House Physician; E. A. Sparks, M.R.C.S., L.R.C.P., Senior Ophthalmic House Surgeon; J. A. P. SHAW, M.R.C.S., L.R.C.P., Junior Ophthalmic House Surgeon; R. H. O. B. ROBINSON, M.B., B.Ch. Cantab., F.R.C.S., Eng., Clinical Assistant in Throat Department; B. SHIRES, M.B., Ch.B. Edin., Clinical Assistant in X Ray Department.

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Jun. H.S. £200.

Barnsley County Borough.—Asst. M.O.H. and Asst. Sch. M.O. £500.

Bath, Royal Mineral Water Hospital.—Res. M.O. £250.

Bedford County Hospital.—Asst. H.S. £150.

Belgrave Hospital for Children, Clapham-road, S.W.—Female H.P. H.S. Each £100.

Birmingham Children's Hospital.—Res. M.O. £150.

Birmingham General Hospital.—Res. Anæsthetist. Obst. H.S. H.S. Each £100. H.S.'s to Spec. Depts. £125. Res. Surg. Officer. £180.

Birmingham, Queen's Hospital.—Surg. Registrar. £100.

Birmingham University.—Lecturer in Physiological Dept. £300.

Bradford, Royal Eye and Ear Hospital.—Hon. Asst. Ophth. Surg.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £120. H.S. £120.

Burnley Union.—Res. M.O. £300.

Cardiff, King Edward VII. Hospital.—H.S. £200.

Derby County Borough Education Committee.—Sch. Dentist. £500.

Dreadnought Hospital, Greenwich, S.E.—H.P. H.S. Each £200.

Glamorgan County Asylum, Bridgend.—Jun. Asst. M.O. £415.

Glasgow, District Mental Hospital, Garlloch, Garlcosh.—Jun. Asst. M.O. £350.

Halifax County Borough.—M.O.H. £900.

Huddersfield Royal Infirmary.—Asst. H.S. £200.

Hull Royal Infirmary.—V.D. and Cas. O. £250. Asst. H.S. £150.

Ipswich County Borough.—Asst. M.O.H. £500.

Leeds General Infirmary.—Res. Surg. Officer. £200.

Leeds Public Dispensary.—Sen. Res. M.O. £250.

Liverpool, Royal Southern Hospital.—Surg. Tutor and Registrar. £20. Second M.O. to V.D. Dept. £200. Two H.P.'s. Three H.S.'s. Each £100.

Manchester, Ancoats Hospital.—H.S. £150.

Manchester Ear Hospital.—Anæsthetist. £15 15s. H.S.

Manitoba University.—Asst. Prof. of Anatomy. $3500. Prof. of Biochemistry. $4500. Asst. Prof. of Physiology. $3500.

Metropolitan Hospital, Kingsland-road, E.—Surg. for Diseases of Nose and Throat.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Res. Cas. O. £200.

Northamptonshire Sanatorium, Creaton.—Res. Med. Supt. £500.

Norwich, Norfolk and Norwich Hospital.—Fourth H.S. £200.

Nottingham General Hospital.—H.P. £200.

Queen's Hospital for Children, Hackney Road, Bethnal Green, E.—H.S. £100.

Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.

Rochester, St. Bartholomew's Hospital.—Res. H.S. £250. H.P. £200.

St. Mary's Hospital, Paddington, W.—Cas. Phys. £100.

Salford Royal Hospital.—Cas. H.S. £150.

Singapore Municipality.—Bacteriologist. 9000 dollars.

Swansea County Borough.—Dental Surg. £500.

Sydney University, New South Wales, Australia.—Chair of Psychiatry. £1100.

Tynemouth County Borough.—Clinical Tuberc. O. and Asst. M.O.H. £600.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments:—Llanwrtyd Wells (Brecon); Southwell (Nottingham).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Walsall County Court in Circuit No. 25. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than August 27th.

Births, Marriages, and Deaths.

BIRTHS.

BILLING.—On July 31st, at Denholm, Chingford, the wife of Dr. E. Billing, of a daughter.

DAVIDSON.—On July 30th, at Avonleigh, Torquay, the wife of Dr. W. Cameron Davidson, of a daughter.

KAY.—On August 1st, at The Manor House, Blakeney, Norfolk, the wife of A. R. Kay, M.R.C.S. Eng., of a son.

SINCLAIR.—On August 3rd, at 20, Riverview Gardens, S.W. 13, the wife of Neil F. Sinclair, F.R.C.S.—a son.

WOODS.—On August 4th, at St. Andrew's-street, Cambridge, the wife of R. Salisbury Woods, M.A., M.D., B.Ch. Cantab., of a daughter.

MARRIAGES.

MURPHY—SPOONER.—On August 2nd, at Bramshott, Hants, William Murphy, M.B., to Harriet Annie Spooner, of Liphook.

DEATHS.

MYERS.—On August 6th, at St. George's-road, S.W., Brigade-Surgeon-Lieut.-Colonel Arthur Bowen Richards Myers, late Brigade of Guards, aged 82.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Short Comments, and Answers to Correspondents.

THE PROBLEM OF THE HEAD LOUSE.*

BY G. A. AUDEN, M.D. CANTAB., F R.C.P. LOND., D.P.H.

THE war has taught us much concerning the life-history and habits of the head louse, and moreover has shown that disinfestation is by no means the easy matter it was at one time supposed to be. This is true of both the head and body louse. It is with the former that I propose to deal in this paper.

With the absence of any proper conveniences, in an overcrowded home, amidst her multifarious duties, it is not altogether surprising that many a mother gives up in despair the attempt to keep her children's heads free from infestation. However, it is really quite uncommon nowadays to find a child who has not had some form of anti-louse treatment. This has been one of the difficulties in my investigation detailed below. It will be admitted that, in view of these difficulties, the discovery of an effective agent for the disinfestation of the head would be a great social service to the community.

Necessary Properties of Effective Agent.

Such an agent, to be of general value, must be (1) non-toxic, (2) non-irritant, (3) non-inflammable, (4) lethal or repellent to the louse, (5) have penetrating power sufficient to destroy the embryo, (6) soften and thus facilitate the removal of the nit. And lastly it must be cheap, readily accessible and easily applied, without any complicated ritual of procedure.

Prof. G. H. F. Nuttall[1] gives a very long list of insecticide substances which have been recommended by various observers. Only a comparatively small number of these, however, conform to the above conditions, while many must be ruled out of court for one reason or another. Again, many of the materials described can be used for clothing only, and require more prolonged application than is possible for treatment of the head.

Advantages of Derbac.

After trials of various substances, I have been experimenting with a soap sold under the proprietary name of Derbac, which appears to possess certain advantages of chemical and physical composition. Made primarily by the action of caustic soda upon the starch, proteins, &c., contained in cereals, the molecular composition is different from that of the ordinary fat soap, and the colloidal products produced in its manufacture are of a different character. In the first place it does not form an insoluble lime soap in combination with the calcium of the water, and there is a much less precipitation of the fatty acids in consequence. The result is that much more fatty acid remains in the solution. Certain soda-starch compounds are formed, and the soda acts upon the proteins to produce soaps of amino-acids and ammonia. Further, Derbac contains a heavy percentage of birch tar, which appears from Prof. Nuttall's list as a useful remedy, repellent to the louse and a well-tried remedy for skin affections. The tar is presumably emulsified in the course of the manufacture. It is probable also that as the birch tar contains cresols and other phenolic bodies, phenolates are produced. I am inclined to regard coal-tar derivates as undesirable for and irritating to the skin. This is seen in the action of carbolic acid on the skin, and in the well-recognised irritation of the skin caused by coal soot. Prof. Nuttall, writing of birch tar (p. 556), says, "Further tests should evidently be made."

"True Wetting" and Destruction of the Nit.

The chemistry of soaps and the colloidal conditions which are formed by their use are exceedingly complicated, and not altogether understood. The cleansing properties are probably in the main due to "true wetting" of the substance caused by an alteration of the surface-tension and the formation of an emulsion which has an affinity for dirt, grease, &c. Many liquids do not truly wet a surface, and there is no "molecular intimacy," as it is called. To be effective in destroying the louse and embryo, it would seem necessary that there should be this true wetting action, accelerated by the essential thorough lathering of the head.

The problem is that of the nit rather than of the louse. The latter can be dislodged by many repellent substances accompanied by mechanical means, such as the Secker comb, especially if it is enmeshed in a good lather. Lice, however, are so resistant that only a prolonged application of most substances, with the exception of the mineral oils, will kill them. Moreover, lice which appear to have been killed are frequently quite active a couple of hours later. Thorough combing out is therefore essential.

The destruction of the embryo in the nit is the chief object to be aimed at. The dislodgment of the dead nit is a secondary consideration. It is not generally recognised that the louse lays her eggs close to the scalp, and that the distance of the nit away from the root of the hair to which it is attached is a measure of the age of the nit. I believe that many a parent has been prosecuted and even fined for louse infestation, although the nits are old shells from which the louse has long hatched out.

Test of Disinfestation Material.

In order to test any disinfesting material, experiments must be carried out under certain predetermined conditions, with definite control experiments. These may be summarised as follows:—

1. Hairs must be taken from children who have received no previous treatment, and on whose heads there are living lice.

2. The hairs supporting nits must be taken immediately before and immediately after treatment with the disinfestor chosen, and incubated under identical conditions, at a temperature of 90° F., the optimum temperature for louse incubation.

3. Nits must contain embryos in both cases. For this purpose it is necessary to examine a number of hairs microscopically. In any given sample of hairs far more shells than living nits are found.

4. After incubation the nits taken before treatment should either hatch out or show evidence that the embryo has continued to develop, while the nits, after treatment, should show no evidence of continued development. Sometimes active pharyngeal movements in the contained embryo can be seen, thus affording definite evidence of its life.

It is thus difficult to carry out experiments which conform to these stringent conditions, or to hatch out lice under artificial conditions, and a good deal of experience is necessary to detect changes in the embryo indicative of death. Moreover, there is no means of learning what percentage of nits in an untreated case hatch out. Under natural conditions a certain proportion of nits probably do not produce living lice.

Results of Experiments.

In my experiments the hairs were placed in test-tubes in an electric thermostat incubator regulated to a temperature of 90° F., and the lice placed in small glass receptacles with a perforated false bottom of glass. In some cases a small plug of damp cotton-wool was placed at the bottom of the tube to prevent desiccation. This, however, appeared to be unnecessary, and increased the difficulty in looking for hatched-out lice.

The result of the 12 experiments may be summarised as follows:—

(*a*) *Adult lice.*—After the head had been well lathered for about ten minutes, the majority of the lice remained motionless, and could be picked or rubbed off with fair ease. When placed upon filter-paper and in a glass cell they appeared to be dead, but had again become active within two hours, in all cases making their way into the lower compartment. The notable fact, however, was that in the three experiments with live lice, all were found dead on the following day, after about 16 to 20 hours' incubation at 90° F. This is remarkable, for the louse is extraordinarily resistant to chemicals if the application is not prolonged. In a control experiment live untreated lice lived 60 hours in the incubator and presumably died of starvation. I have found lice to revive after a drop of chloroform has been placed upon them. (To the flea chloroform causes instantaneous death.) They also survived drops of a mixture of absolute alcohol and clove oil, of such strength as to cause intense burning sensation on the tongue or lip. It would appear, therefore, that the treatment, although not immediately fatal, does have a lethal effect upon the adult louse, and that two or three applications would be efficacious in freeing a head from lice by these means. A difficulty which is often found in these cases is the presence of impetiginous crusts under which the lice seek shelter. It is therefore a wise precaution to take steps to kill the lice which have been detached, by boiling the towels which have been used or by pouring boiling water upon them.

(*b*) *Nits.*—I prepared a considerable number of slides of nits incubated at 90° F., taken immediately before and after treatment. That some embryos survive a single treatment was proved by their hatching out, but the evidence of the microscope goes to prove that far more hatched out, as judged by the vacated shells, from the untreated hairs. In by far the majority of slides made from untreated hairs, the nits were found to be empty, and the bottom of the test-tube in which they had been incubated was littered with

* An abstract of a paper read before the School Medical Officer Group of the Society of Medical Officers of Health.

[1] Parasitology, vol. x.

freshly hatched lice. The appearance of the unhatched nits after treatment and incubation is not altogether distinctive, but there seems to be a shrinkage in the embryo in treated cases, leaving a space between the shell and the body, probably due to drying up after death.

Comparison of Disinfestation Agents.

It would appear from the above experiments that the soap in question fulfils to a considerable extent the conditions laid down in this experiment. It appears to have a lethal effect on the embryo in the nit in a large number of cases, but more than one application seems necessary to destroy all viable embryos. It immobilises the louse, but does not immediately kill it. As all lice after treatment died within 24 hours, it is probable that it has more than a mere repellent effect. In this connexion I may add that bed-bugs immersed for one minute in an ordinary solution of the soap died immediately. It is non-toxic and non-irritant, easily applied, and has no danger attendant upon its use. It has also the merit of being within the means of the poorest and least intelligent parents of the community. Further, it may be hoped that an indirect advantage may accrue from the fact that it is a soap in encouraging parents to appreciate the general hygienic value of a weekly head-wash for their children if not for themselves.

THE TRAINING OF EPILEPTICS IN THE UNITED STATES.

IN the *New York Medical Journal* of June 15th appeared an article by Dr. L. Pierce Clark, dealing with the study and sociological training of epileptics. Dr. Clark points out the scientific need for exact observation of the peculiar physical incitors, when present, and of the psychic factors which lead to attacks of epilepsy, and the lack of suitable places where such work may be carried out. It is not possible for the trained observer to gain a proper evaluation of the character of the epileptic in surroundings that do not lend a normal setting in which the individual may display his innate temperamental defects. Large public hospitals and sanatoriums hardly contribute such precise and detailed observations as are now found necessary for exact diagnosis. Hence the need of small observation clubs and homes, for study and treatment of obscure cases. The solicitude customary in the patient's own home makes the latter environment inconvenient for trained observers; a combination is required of close observation with home environment to furnish data on the real nature of this obscure periodic disorder and its foundations in perverted and undeveloped instincts.

Epileptics Unsuitable for State Hospitals.

Epileptics placed in State hospitals for the insane disturbed an otherwise tranquil environment by their general inaptitude for socialisation. In many instances the temperamental faults of epileptics have necessitated restriction of their separate accommodation to large buildings where better personal discipline could be maintained, but reversion to this old institutional type only made matters worse, and the provision of small isolated cottages is the plan now widely recognised to be best for this class of patient.

Dr. Clark's own experience at the Craig Colony for Epileptics led him to provide each private patient with his separate nurse trainer and a tranquil existence; normal contacts were thus more or less evenly maintained, but although the life itself was ideal it seemed to encourage the main trends of the epileptic's disease. The normal residents with whom the patient came in contact either shunned the patient or over-indulged his eccentricities; and it is doubtful how closely in contact with each other epileptics may dwell without harm.

The chief aims, he thought, in group treatment of the epileptic in private practice were: (1) to establish an environment giving a fair knowledge of the life reaction faults each patient possessed; (2) an opportunity to direct proper re-education of habits; and (3) preparation of the more favourable cases to re-enter the outside world.

A First Experiment.

An effort in sociological study of the epileptic was first undertaken eight years ago on the edge of a little New England town; a group of men patients was established, each with an individual nurse trainer or attendant; but the unity between a proper home atmosphere and the actual training force was not complete, nor was the training personnel sufficiently unified to make consistent general training possible. However, daily routine, training, and observation were in force; the patients worked at gardening, woodcutting, and handicrafts, and later in the summer at gathering fruit. While this contact with townsfolk widened their interests, it lacked in social "rapport." The club being two miles distant from the town, the patients had little opportunity to engage in small village interests and activities. Thrown thus upon their own resources, the internal activity of the club group had to be expanded; but there was disinclination among the patients to adapt themselves to its environment, particularly on the part of those who were more rigid in mind and habits. Many calculated that the summer would soon pass, and that there was no use in making great efforts for so short a period.

The next step was to move the club group nearer to New York in the autumn and eliminate the faults in social grouping. Several normal individuals lived in the same house with the patients; impromptu lecture courses and new occupational interests were provided. A continued change of appeal is necessary to stimulate the rigid mental habits of the epileptic. Not a few lessened their conflicts by long walks and by occupation in the workshops.

Mixed Groups of the Two Sexes.

The next summer the New England village plan was again instituted, but with a different home management, under the nurse trainers themselves. Cottages, one for women and one for men, a short distance from each other, were secured. One dining service for all was provided. The forming of mixed groups of both sexes proved a greater incentive to spontaneous activity, occupational and social, than we had hitherto come across. The club group returned to the suburbs for the winter, where it held no new features apart from an experience of occupational outlets that withdrew much of the patient's attention from the still too rigid home management.

The following summer, the third, an abandoned hotel on the main street of the same town was taken over. Inasmuch as many patients had in the past shown considerable disinclination to follow consistent work merely for the work's sake, a system of remuneration and prize rewards was instituted, especially in gardening. A great deal of directed training had then to be undertaken by the nursing staff. Many interesting observations in this field were made; the compensation and reward principle is not a bad one, and many people, sick or well, will keep continuously employed for no other motive; in this respect the epileptic is no exception.

We soon discovered that having patients in the heart of the village life was very bad for them. Perhaps if time, patience, and extraordinary tact were employed, this principle would be no more harmful for epileptics in the United States than it is in Europe, as followed out at Bielfeldt, or in the colonisation of the insane at Ghiel in the Scottish boarding-out system. But the epileptic is not as amenable to gregarious and family life as is the chronic dement; his very temperament is opposed to this species of social treatment unless discriminating guidance and supervision are provided.

In the fourth summer it was decided to test a seaside residence. All the former features of interests, occupations, and grouping were retained, and it was found that other guests at this resort were more casual and less demanding than the people of a country town. The separate personnel of home management was finally discarded, and the club placed under one head; the social side of club activity was a great success, but consistent work and teaching were much slowed. Sea-bathing was beneficial; the patients were under proper espionage, and no accidents occurred.

The Most Recent Experiments.

The fifth summer an agricultural college town was tried, and all the patients took one or more of the summer courses; the work they accomplished did credit to all. Most epileptics possess but a third of the normal individual's physical and mental capacity, but the environment did not prove too taxing, as the summer schedule was not nearly so strict as the regular term college work.

The sixth summer it was thought that climatic conditions differing from those of the seashore experiment might have a social and occupational value in treatment. To this end the whole group was taken to the Adirondacks, and distributed in adjacent cottages; four schools were inaugurated, consisting of carving classes, Montessori and kindergarten work, æsthetic and rhythmic dancing, and English classes. Some psychotic and neurotic patients were included. The use of patients as assistant teachers increased the value of the experiment, and showed that such a plan could be made highly useful to the epileptic.

The present experiment embraces all the good points learned from previous settings; the club is established a short distance from a large town situated on the Sound in Connecticut. Personal attendants for each patient are dispensed with, group nursing and training being substituted under efficient and capable trainers. The two sexes live in the same household, which consists of children, youths, and adults as in an ordinary large family. Tennis courts, a golf course, and sea-bathing supplement indoor activities. The proper coöperation of the servants employed helps not a little. Housework, lectures, books, and magazines are available; some undertake church work, and a few have taken courses in the small business college the town affords. A club group has been formed for constructive discipline and suggestions in social activities. Thus there is

now a fine combination of discreet treatment in its broadest and best sense.

The home club is not a sanatorium in the ordinary sense; it is not a home, with the unyielding personal demands so often encountered; it is not a school with inflexible and rigid conformity to rules. It is something of all these, with social advantages adapted to the level of the innate possibilities of the epileptic. Above all, it is sufficiently in contact with outside activities to increase the epileptic's hope that he may leave it so soon as he is able to make the proper adjustments to the ordinary stresses of life.

THE MEDICAL DEPARTMENT AND MILITARY MORALE.

THE *Military Surgeon* for June prints as its first paper the Wellcome first prize essay with the title given above. The successful essayist is Lieut.-Colonel Louis C. Duncan, and it must please Mr. H. S. Wellcome, who founded the prize, to know that his liberality has evoked so very valuable an examination of the subject. Competition was open to medical officers, present or past, of the United States Army, Navy, Public Health, or Reserve services. Every officer works intuitively to improve the morale of his men, but in the United States Army this duty was specialised, and included in the staff of the American Expeditionary Force was "a morale division, with a chief, and subordinate officers in all divisions, brigades, and regiments." "An army has two supports: physical and mental (or moral). The physical support has become relatively the more important." The influence of the army medical officers on morale is great, for the conditions which govern the physical support are already, most of them, under medical supervision (such as food, shelter, clothing, health and sanitation), while to the department falls also in great measure the choice of the recruits and the elimination of the unfit: "they detect the diseased, the insane and the degenerate," eliminate "men with chronic venereal disease, drug addicts, drunkards, sexual perverts," and, an unexpected class, "the chronic grumbler." "The chronic venereal case will probably not be accepted for first-class service"; [he cannot, for instance, be a range-taker in the British Navy.] If the soldier's morale is to be maintained he must be kept in good health, and the importance of sanitary camp sites, kitchens, latrines in relation to health cannot be over-estimated. Armies have been ruined by disease alone, but the epidemics feared in the past have been conquered, small-pox, yellow fever, typhoid, and even typhus. Cleanliness of person and clothing, the prevention of lice and scabies, are being now properly studied and handled; for these the Medical Department will be largely responsible. If excellent care is given to the sick and wounded, the personal confidence of every soldier is increased and the morale of the army is exalted. Venereal disease has a deteriorating effect. The slack or slovenly appearance of a ward of venereal patients is a matter of common notice, so it is an important duty in relation to morale for medical officers to reduce venereal disease "by the utmost energy in instruction, provision of effective prophylaxis, enforcement thereof, and effective treatment."

Next come the mental factors—character. There was a great difference between the army of 1898 (Spanish-American war) and that of 1917-18. The recruits were similar, the soldiers different. In 1898 saloons, and worse places, abounded, drunkenness was common. In 1917 saloons and other vicious resorts were eliminated: men did not deteriorate in the army. Soldiers may even have been improved. Training and drill teach order, alertness, obedience, and confidence in brethren. A well-disciplined army has good morale. Discipline to-day is intelligent, and rests on an educated conviction of the need for method, regularity, and obedience. The Medical Department disciplines its own men, who are 8 per cent. of the army; further, it detects malingerers, and determines pleas of insanity, &c., and must remember not to be unduly lenient, for though discipline does not abolish mercy, justice demands punishment for crime. Officers must be leaders, better educated, more skilful, and with more initiative than their men. The medical officer knows the men individually, and should therefore be in close touch with the morale officer; he should throw himself into the sports and recreations of his unit. Games develop vigorous bodies, entertainments cheerful minds, and both are in the province of the Medical Department.

The elevating influence of sex is not to be forgotten: the Army Nurse Corps is part of the Medical Department. The Red Cross works under its direction—why not the Y.M.C.A., and the chaplains, most of whose work is in the hospitals? In the Meuse-Argonne battles, further forward than the Red Cross tents, it was to the regimental aid stations that men not actually sick, but weak and exhausted, turned for chocolates and dough-nuts, and were themselves sent back refreshed, turned again into happy warriors. The Medical Department has no direct part in winning victories, yet Napier gave the doctors credit for the victory at Vittoria, as they had sent back 5000 men from the hospitals, cured, into the line. The part, then, of the Medical Department is first to do what is its own technical duty well; secondly, to encourage all helpful agencies directed by others; thus, to the sound body the department has secured is added the quickening spirit. The whole essay will repay study.

PUBLIC HEALTH IN TASMANIA.

IN presenting the report on Public Health in Tasmania for the 12 months ending June 30th, 1920 (Hobart, 1920), Dr. E. Sydney Morris, Chief Health Officer and Chief Quarantine Officer for the State, mentions that he did not assume his position until April 27th, the duties having been performed by the assistant health officer, Dr. Arthur H. Clarke, up to that date. Dr. Morris is, however, satisfied, by the results of his personal observation, that "matters of local health administration are grossly neglected by many local authorities throughout the State," and that "the general tendency seems to be to wait until an outbreak of disease necessitates recourse to drastic and expensive remedies, rather than to carry out a systematic and steady growth of important sanitation." As Tasmania has had responsible government since 1856, it seems quite time that steps should be taken to bring about an improvement. There is still no organised method of nightsoil disposal in certain important centres (the individual householder being charged with this responsibility), and only four (out of 49) districts took samples of food and drugs to ascertain if the legal standards of quality were maintained. The Commonwealth Government have, however, intimated that they are prepared to extend their sphere of operations in regard to public health, subsidise measures of disease prevention, and "inspire and coördinate public health measures generally without infringement or transfer of the sovereign power of States," as is done in the U.S. of America. It is to be regretted that adulteration of milk is somewhat extensively prevalent; of 65 samples taken, no less than 26 were found to be adulterated or below the legal standard. The chief causes of death during the year 1919 were diseases of the circulatory system (13·57 per 10,000), influenza (10·64), nervous diseases (9·70) and respiratory diseases (9·41). There were only 11 deaths from typhoid fever (0·52 per 10,000), and not a single death from small-pox. The total death-rate was 103·77 per 10,000 during 1919, as compared with 88·42 in 1918; the increase was chiefly due to influenza (10·64, compared with 1.81 in 1918), circulatory diseases (13·57, compared with 12·17), and "diseases of early infancy" (9·22, compared with 7·31). The general death-rate in 1919 from all causes was 10·37 per 1000, compared with 8·84 in the previous year: the ratio is, however, lower than in any other State of the Australian Commonwealth, West Australia having the next lowest (11·10), and New South Wales the highest (13·10), the average for the whole of Australia being 12·82.

The pandemic of influenza invaded Tasmania in August, 1919; excellent arrangements had been made in advance to cope with the situation; an amending Act had been passed, extending the powers of the Chief Health Officer; vaccine depôts and provision for free inoculation, ambulance transport, special hospital accommodation and nursing had been organised; respirators were supplied to the public, and local authorities advised through the press or by circular. When the disease actually appeared, schools, theatres, picture shows, &c., were closed; religious services in churches and buildings only allowed under certain conditions; masks were required to be worn by persons travelling inside any public conveyance where the number exceeded three; all shops (except chemists and dispensaries) were closed at 6 P.M. Extra doctors and nurses were engaged from the mainland. Only 898 cases of influenza were actually notified, being those of the C type (toxic, fulminant, or severe pulmonary); this number is therefore no indication at all of the extent of the epidemic. Dr. Morris estimates that "fully 33 per cent. of the population were affected"; this would imply some 70,000 cases, the mean population of Tasmania being estimated at 211,416. It is to be regretted that 17 towns are still without any organised sanitary service, the conditions observed by inspecting officers being "in many cases revolting." In the report of the Chief Inspector (Appendix II.) it is stated that several sanitary inspectors, who have obtained certificates of competency from the Royal Sanitary Institute, have been "informed by some local authorities that the stipends fixed by the Wages Board for expert knowledge are beyond their means of payment," and some of these officers have received notices of termination of their appointments. Such a condition of things is in the highest degree unsatisfactory.